

**REPUBLIC OF INDONESIA
CLIMATE CHANGE PROGRAM LOAN (II)
ADVISORY AND MONITORING**

FINAL REPORT

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GLOBAL GROUP 21 JAPAN, INC.

INSTITUTE FOR GLOBAL ENVIRONMENTAL STRATEGIES (IGES)

AIP
CR (3)
10-025

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Abbreviations

3Rs	Reduce, Reuse, and Recycle
A&M	Advisory and Monitoring
AC	Air Conditioner
ADB	Asian Development Bank
ADF	Asian Development Fund
AFD	Agence Française de Développement
AMFR	Agency for Marine and Fisheries Research
ANU	Australian National University
AOSC	Aliksa Organic SRI Consultant
APBN	State Budget of Revenues and Expenditures
APHI	Association of Indonesian Forest Concessionaries
APPATINDO	Indonesian Ground Water Drilling Company Association
A/R	Afforestation and Reforestation
ASBINDO	Indonesian Flower Association
ASPADIN	Indonesian Bottled Drinking Water Companies Association
AusAID	The Australian Agency for International Development
AWS	Automatic Weather Station
BAKOREN	National Energy Coordination Board
BAPPEDA	The Regional Development Planning Agency, Republic of Indonesia
Bappenas	The National Development Planning Agency, Republic of Indonesia
BAU	Business as Usual
BBWS	River Basin Organization (tentative English translation of Balai Besar Wilayah Sungai)
BBP2TP	National Coordinator of BPTP
BKTRN	The National Board for Spatial Planning Coordination
BMG	The Meteorology and Geophysics Agency
BMKG	The Agency of Meteorology, Climatology and Geophysics, Republic of Indonesia (renamed from BMG in September 2008)
BMZ	Economic Cooperation and Development
BNPB	The National Disaster Management Agency, Republic of Indonesia
BOD	Biochemical Oxygen Demand
BORDA	Bremen Overseas Research and Development Association
BPBD	Local Disaster Management Agency, Republic of Indonesia
BP-DAS	Watershed Management Technical Units
BPP	Electricity Production Cost
BPPT	The Research and Technology Agency, Republic of Indonesia

BPTP	Indonesian Agency for Agriculture Technology Research and Assessment (tentative English translation of Balai Pengkajian Teknologi Pertanian)
BUMN	Ministry of State Enterprises
BRKT	Agency for Marine and Fisheries Research
BWS	River Basin Organization (tentative English translation of Balai Silayah Sungai)
BRESL	Barrier Removal to the Cost-Effective Development and Implementation of Energy and Efficiency
CBM	Community-Based Management
CCPL	Climate Change Program Loan
CCS	Carbon capture and storage
CDM	Clean Development Mechanism
CERC	Central Electricity Regulatory Commission, India
CERD	Committee on the Elimination of Racial Discrimination
CEU	Commission of the European Union
CFL	Compact Fluorescent Lamp
CFS	Climate Field School
C-CH ₄	Carbon Equivalent Methane
CH ₄	Methane
CIDA	Canadian International Development Agency
CO ₂	Carbon Dioxide
COD	Chemical Oxygen Demand
COP	Conference of the Parties
COREMAP	Coral Reef Rehabilitation and Management Program
CRITC	Coral Reef Information and Training Center
CRMP	Costal Resource Management Plan/Coral Reef Management Plan
CSIRO	Commonwealth Scientific and Industrial Research Organization
CSR	Corporate Social Responsibility
CT	The Coral Triangle
CT-6	The Six Coral Triangle Countries (Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor-Leste and Solomon Islands)
CTI	Coral Triangle Initiative
CTI-CFF	Coral Triangle Initiatives on Coral reef fisheries and food security
CY	Calendar Year
DAK	Special Allocation Fund
DEN	National Energy Council
DEWATS	Decentralised Wastewater Treatment System
DFID	Department for International Development (UK)
DG	Directorate General
DGEEU	Directorate General of Electricity and Energy Utilization

DGFC	Directorate General of Food and Crops
DGHS	Directorate General of Human Settlements
DGWR	Directorate General of Water Resources
DIC	Dissolved Inorganic Carbon
DKI	Daerah Khusus Ibukota (Exclusive Region)
DME	Energy Self-sufficient Village Program
DNA	Designated National Authority
DPL	Marine Protected Area in Indonesia
DPMU	District Project Management Unit
DPR	Dewan Perwakilan Rakyat (House of Representatives)
DURMT	Dissemination Unit of Water Resource Management and Technology
EAFM	Ecosystem Approach to Management of Fisheries
EC	European Commission
EE	Energy Efficiency
EKUIIN	Coordinating Ministry of Economy, Republic of Indonesia
EMS	Energy Managers System
ESCOs	Energy Service Companies
ESDM	Ministry of Energy and Mineral Resources, Republic of Indonesia
ESM	Energy Managers
ESSV	Energy Self Sufficient Village
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FFS	Farmers Field School
FIO	First Institute of Oceanography, China
FIT	Feed-in Tariff
FLEGT	Forest Law Enforcement Governance and Trade
FMU	Forest Management Unit
FNC	The First National Communication to the United Nations Framework Convention on Climate Change
FORDA	Forestry Research and Development Agency
FRIS	Forest Resources Information System
F/S	Feasibility Study
FY	Fiscal Year
GAP	Good Agriculture Practices
GAP	Green Aid Plan
GAPASDAP	River, Lake and Cross Transportation Businessman Association
GAPKINDO	Indonesian Rubber Company Association
GEF	Global Environment Facility
GG21	Global Group 21 Japan, Inc.

GHG	Greenhouse Gas
GNKPA	National Partnership Movement to Save Water
GOF	The Government of France
GOI	The Government of Indonesia
GOJ	The Government of Japan
GPS	Global Positioning System
GRIM	Gondol Research Institute for Mariculture
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
GWh	Gigawatt Hour
ha	Hectare
HAKE	Association of Energy Conservation Experts on Indonesia
HKTI	Indonesian Farmer Association
hr	Hour
HTI	Industrial Forest Plantation
HTR	Community Forest Plantation
IAHRI	The Indonesian Agroclimate and Hydrology Research Institute
ICCPL	Indonesia Climate Change Program Loan
ICCSR	Indonesia Climate Change Sectoral Roadmap
ICCTF	Indonesian Climate Change Trust Fund
ICED	Indonesia Clean Energy Development
IDA	The International Development Association
IEA	International Energy Agency
IFAD	The International Fund for Agricultural Development
IFC	The International Finance Corporation
IFCA	Indonesia Forest Climate Alliance
IGCC	Integrated gasification combined cycle
IGES	Institute for Global Environmental Strategies
IKK	Water Supply System Project in capitals of sub-districts (Kecamatans)
IMA	Indonesia Mining Association
INCAS	Indonesia's National Forest Carbon Accounting System
IPB	Bogor Agricultural Institute
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
ITB	Institute of Technology, Bandung
ITS	Institute of Technology Sepuluh Nopember
ITTO	The International Tropical Timber Organization
IUP	Geothermal Mines Concession
IWRM	Integrated Water Resources Management

JBIC	Japan Bank for International Cooperation
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JK-PA	Water Resources Management Communication Information Network
KAI	Indonesian Water Partnership
KEN	National Energy Policy
KFCP	Kalimantan Forests and Carbon Partnership
KfW	German Development Bank (Kreditanstalt für Wiederaufbau)
KITA	Kitakyushu International Techno-cooperative Association
KIPRAH	Community-Based Solid Waste Management Project by BORDA-Indonesia
KLH	State Ministry of Environment, Republic of Indonesia
KNI-BB	Indonesian Committee on Large Dams
KOICA	Korea International Co-operation Agency
KPH	Forest Management Unit
KPHL	Protection Forest Management Unit
KPHP	Production Forest Management Unit
KTNA	The Progressive Fisherman and Farmer's Association
kWh	Kilowatt hour
LAPAN	National Institute of Aeronautics and Space, Republic of Indonesia
LDEO	Lamont Doherty Earth Observatory
LEPLI	Economic and Agricultural Institution on Irrigation land (tentative English translation of Lembaga Ekonomi Pertanian Lahan Irigasi)
LIPI	Indonesian Institute of Sciences
LNG CC	Liquid Natural Gas Combined Cycle
LP3ES	Institute for Social and Economic Research, Education and Information
LULUCF	Land Use, Land-use Change, and Forestry
MAMMINASATA	Makassar, Maros, Sungguminasa and Takalar region in Indonesia
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MEMR	Ministry of Energy and Mineral Resources
METI	Ministry of Economy, Trade and Industry
METI	Indonesian Renewable Energy Society
MIC	Middle Income Country
MMAF	Ministry of Marine Affairs and Fisheries
MMC	Mangrove Management Centre
MOA	Ministry of Agriculture
MOEJ	Ministry of the Environment of Japan
MOF	Ministry of Finance

MOFR	Ministry of Forestry
MOH	Ministry of Health
MOHA	Ministry of Home Affairs
MOI	Ministry of Industry
MOU	Memorandum of Understanding
M/P	Master Plan
MPA	Marine Protection Area
MtCO ₂ e	Million Ton Carbon Dioxide Equivalent
MW	Megawatt
N/A	Not Applicable
NAD	Nanggroe Aceh Darussalam (name of a province in Indonesia)
NAMA	Nationally Appropriate Mitigation Actions
NAP	National Action Plan
NAPA	National Adaptation Plan of Action
NAP-CC	National Action Plan Addressing Climate Change
NAP-DRR	National Action Plan for Disaster Risk Reduction
NCCC	The Indonesian National Council on Climate Change
NC-CDM	The National Commission on the Clean Development Mechanism
NGOs	Non-governmental Organizations
NH ₃ -N	Ammoniac Nitrogen
NOA	Aquatic Conservation Area Development Project
NOSC	Nagrak Organic SRI Center
NPOA	The Indonesian National Plan of Actions
NSCTI	National Secretariat for Coral Triangle Initiative
NTB	Nusa Tenggara Barat (name of a province in Indonesia)
NTB-WRMP	Nusa Tenggara Barat Water Resource Management Programme
NTT	Nusa Tenggara Timur (name of a province in Indonesia)
NWRC	National Water Resource Council
N ₂ O	Dinitrogen monoxide
ODA	Official Development Assistance
OECC	Overseas Environmental Cooperation Center
O&M	Operation and Maintain
P3A	Farmer Water User Association
PAMSIMAS	Water Supply and Sanitation for Low Income Communities
PB	Disaster Management
pCO ₂	carbon dioxide partial pressure
PDAMs	Water Supply Corporations
PEACE	PT Pelangi Energi Abadi Citra Enviro (name of a research institute on natural resources and environment in Indonesia)

PERPAMSI	Drinking Water Association throughout Indonesia
PISP	Participatory Irrigation Sector Project
PLG	Proyek Lahan Gambut (the ex-Mega Rice Project area)
PT PLN	State Electricity Company
PMO	Project Management Office
PNPM	Poverty Reduction Programme
POLA	Integrated Water Resources Management Patterns and Plans
PP	Government Regulations
PPIU	Province Project Implementation Unit
PROMEEC	Promotion of Energy Efficiency and. Conservation
PSDA	National Resources Management
PU	Ministry of Public Works, Republic of Indonesia
RE	Renewable Energy
RE	Rural Electrification
REDD	Reducing Emissions from Deforestation and Degradation
REDDI	Reducing Emissions from Deforestation and Degradation in Indonesia
REMO	Regional Fisheries Management Organization
RENSTRA	Strategy Planning
RHL	Land and Forest Rehabilitation Program
RKP	Government Action Plan
RLPS	The Department of Land Rehabilitation and Social Forestry
R-Plan	Readiness Plan
R-PP	Readiness Preparation Proposal
Rp.	Rupiah
RPJMN	Medium-Term National Development Plan
RPOA	Regional Plan of Actions
RTMB	Rinjani Track Management Board
RUEN	National Energy Plan
RUKN	The National Electricity General Plan
SANIMAS	Community based sanitation facilities
SCs/SC	Steering Committee Meetings
SERCs	State Electricity Regulatory Commissions
SF	Special Fund
SFCP	Sumatra Forest Carbon Partnership
SIIAM	The Supporting Implementation of Irrigation Asset Management Project
SKEPHI	Secretariat for Forest Conservation in Indonesia
SKPD	Local Level Technical Group (tentative English translation of Satuan Kerja Perangkat Daerah)
SKPG	Food and Nutrition Security System

SNC	The Second National Communication to the United Nations Framework Convention on Climate Change
SNI	Indonesian National Standard
SOM	Senior Officials Meeting
SOME-METI	Senior Officials Meeting on Energy, Ministry of Economy, Trade and Industry
SOP	Standard Operation Procedure
SPAM	Drinking Water Supply System
SRI	System of Rice Intensification
SS	Suspended Solids
TA	Technical Assistance
t-CO ₂ eq	Ton Carbon Dioxide Equivalent
TIU	Technical Implementation Unit
TKPSDA	National Water Resource Coordination Team
TNC	The Nature Conservancy
TOR	Terms of Reference
TOT	Training of Trainers
TSS	Total Suspended Solid
UN	United Nations
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
UOI	University of Indonesia
USA	United States of America
USAID	United States Agency for International Development
USD	United States Dollar
UU	Row
WB	World Bank
WBSCD	The World Business Council for Sustainable Development
WG-FCC	The Working Group on Forest and Climate Change
WKP	Geothermal Working Area
WPP	Fisheries Management Areas
WS	River Basin
WUA	Water Users Association
YAAE	Adhi Eka Water Association

Background

➤ Climate Change Issues and Policy Development in the Republic of Indonesia

Despite its status as a Non-Annex-I country of the United Nations Framework Convention for Climate Change (UNFCCC), the Republic of Indonesia occupies an important place in worldwide efforts of climate change mitigation. This owes to a few unique conditions: It is often said that Indonesia is the third largest GHG emitting country in the world (when emissions from the Land Use, Land Use Change and Forestry (LULUCF) Sector are included); despite persistent poverty, Indonesia's economy has been growing rapidly due to growth in the industry sector, which has, in turn, led to a sharp rise in energy consumption. Furthermore, there is an urgent need to strengthen climate change adaptation policies in Indonesia because Indonesia's geographical features and a large share of its agricultural and fishery sector—in terms of labour absorption—make its society and economy quite vulnerable to the impact of climate change, particularly to a rise in sea level, precipitation change, flood, and drought.

These conditions have, in recent years, urged the Government of Indonesia (GOI) to intensify its efforts to address climate change. Indonesia, as the host country of the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC-COP13) in Bali (December 2007), played a leading role in formulating the Bali Roadmap. This roadmap articulated the necessary steps to developing a new international climate regime beyond 2012. The GOI also intends to aggressively implement its own policies on climate issues. In October 2009, President Susilo Bambang Yudhoyono declared the GOI's target to reduce GHG emissions by 26% from BAU (Business As Usual) by 2020. He added that support from developed countries/international organizations would enable further reductions of up to 41%. The GOI is formulating its action plan, which is to be submitted to UNFCCC shortly, based on its commitment to reducing emissions by 26% by 2020.

As climate change issues cover a wide range of sectors, governments sometimes have difficulty coordinating the activities of related agencies/stakeholders in planning and implementing appropriate measures. The GOI has been reinforcing its institutional frameworks to mobilize intellectual, financial, and human resources from various government and non-government agencies. Among recent institutional set-ups, two can be regarded as key milestones:

- The National Council for Climate Change (NCCC), an inter-agency council for coordinating climate policies, which was established in October 2008; and
- The Indonesian Climate Change Trust Fund (ICCTF), which was established in September 2009 to finance projects and activities consistent with GOI policies.

The mitigation target and institutional reforms described above are supported by a number of assessments and plans. These plans have been prepared in order to provide an understanding of the geographical, climatological, and socio-economical circumstances of climate change and to include climate change policies in national development planning. The following are among the most important documents recently published.

- The National Action Plan Addressing Climate Change (NAP-CC), which was developed by KLH in 2007, provided principles that cover immediate (2007–2009), short-term (2009–2012), medium-term (2012–2015), and long-term (2025–2050) time frames, for both mitigation and adaptation.
- National Development Planning: Indonesia Responses to Climate Change (The Yellow Book) was prepared by Bappenas in 2008 as a document to bridge the gap between the ongoing National Mid-term Development Plan (RPJMN 2004–2009) and the next RPJMN (2010–2014).
- Indonesia Climate Change Sectoral Roadmap (ICCSR), drafted in 2009 by Bappenas with support from GTZ, set priority issues and key policy actions in four 5-year periods till CY2030.
- The Second National Communication (SNC), drafted by KLH in 2009 with support from UNDP and GEF, to be submitted to the UNFCCC by 2011, lists the latest national circumstances, the GHG inventory and the needs and policies for both mitigation and adaptation policies till CY2020.

Based upon the key criteria of (i) generating added value of investment and (ii) synergizing climate change and Millennium Development Goals (MDGs), the primary sectors in the above documents can be identified as follows*:

- Energy, Industry, Mining, Transportation, LULUCF, Waste Management and Agriculture for mitigation; and
- Agriculture, Coastal Areas and Small Islands, Marine life and Fisheries, Water Resource Management, and Health for adaptation.

Additionally, weather and climate forecasting information, the raising of awareness, and the formulation of suitable spatial plans to integrate climate change into the development of sectoral policies have been recommended as crosscutting issues.

* The above documents list sectors in different orders and sometimes bundle multiple sectors into one (e.g. energy sector, industry sector, and mining sector bundled into the 'energy, industry, and mining sector').

➤ **The Indonesia Climate Change Program Loan**

In January 2008, the Government of Japan (GOJ) announced the 'Financial Mechanism for Cool Earth Partnership', which is designed to provide assistance on the basis of bilateral policy consultations to developing countries that aim to achieve emission reductions and economic growth and to contribute to climate stability. The Indonesia Climate Change Program Loan (ICCPL), which is the first large-scale programme loan (three tranches over three years) under the above financial mechanism, was decided upon between the GOI and the GOJ in August 2008. Based on this agreement, the former Japan Bank for International Cooperation (JBIC), which has now been merged into Japan International Cooperation Agency (JICA), disbursed USD 300 million to the GOI in September 2008. The Government of France (GOF), through AFD (Agence Française de Développement), also provided USD 200 million in co-financing in CY2008.

The ICCPL fund is designed to assist the GOI in overcoming budgetary constraints and has been integrated into the GOI general budget (treasury fund).

In order to facilitate the implementation of institutional and policy reforms and pilot projects related to climate change issues, a set of policy targets/actions was prepared by the GOI, based on *the Yellow Book*, and was summarized in the form of a *Policy Matrix*. The matrix originally covered six sectors: The 1) land use, land-use change, and forestry (LULUCF) and 2) energy sectors for Mitigation measures and the 3) water resource, 4) water supply and sanitation and 5) agriculture sectors for Adaptation measures; other policy actions for institutional and organizational strengthening, spatial planning, and so on were included in the 6) crosscutting sector.

The progress/attainments of the policy targets/actions stated in the Policy Matrix were monitored by the Advisory and Monitoring team (A&M team) and were reported on at the Steering Committee Meetings (SCs). SCs are periodically convened by the National Development Planning Agency (Bappenas) for delegates from the GOI, GOJ/JICA and the GOF/AFD to confirm the progress/attainments of policy targets/actions and to discuss possible remedial measures and/or additional actions to be taken.

A revised version of the Policy Matrix for CY2009 was discussed at the 3rd SC in May 2009 and it was agreed upon to include two additional sectors for monitoring, namely, (i) Disaster Management and (ii) Marine, Coral and Fisheries. The GOJ and the GOF agreed both to this revision and to providing the second tranche of the ICCPL.

The second tranche of the ICCPL (USD 400 million from JICA and USD 300 million from AFD) was disbursed in 2009. The USD 400 million was the first ODA loan under the framework of the Hatoyama Initiative to support, through financial and technical cooperation, the policies of developing countries that addressed Climate Change issues.

➤ **The Advisory and Monitoring activities for the second year of the ICCPL**

The Institute for Global Environmental Strategies (IGES), together with Global Group 21 Japan, Inc. (GG21) formed the new A&M team under a contract with JICA. This team was formed to monitor the progress/attainments of CY2009 policy targets/actions, provide policy recommendations, evaluate the contribution that ICCPL made to Indonesia, and prepare institutional design for future cooperation to support GOI's efforts to address climate change beyond CY2010. This report has been prepared by the new A&M team to report on the progress of monitoring activities and to make advisory comments based on the information obtained as of February 2010. Some updates have been made where appropriate and necessary, based on the June 2010 visit to conduct a CCPL Phase I programme evaluation covering the period 2007–2009.

The overall conclusion, lessons learned and suggested issues for consideration for the future have been included in the Program Evaluation Report, which has been prepared simultaneously and separately.

Executive Summary

Executive Summary

The Policy Matrix of the Climate Change Programme Loan to the Republic of Indonesia originally covered six sectors: The 1) land use, land-use change, and forestry (LULUCF) and 2) energy sectors for Mitigation measures and the 3) water resource, 4) water supply and sanitation and 5) agriculture sectors for Adaptation measures; other policy actions for institutional and organizational strengthening, spatial planning, and so on were included in the 6) crosscutting sector.

Based on the monitoring results of the CY2008 policy targets/actions, the GOI prepared a revised version of the Policy Matrix for CY2009. This revised version included comprehensive reviews of future institutional designs, remedial measures for delayed policy actions and two additional sectors to be monitored, namely, (i) Disaster Management and Disaster Risk and (ii) Marine, Coral and Fisheries.

The CY2009 Policy Matrix includes fifty four actions in total over eight sectors. The attainments of the CY2009 Policy Matrix are summarized in Table 1.

Table 1. Number of attained actions in the CY2009 Policy Matrix

	LULUCF	Energy	Water Resource	Water Supply	Agriculture	Disaster	Marine	Cross	Total	% Cumulative
◎	0	0	2	0	2	0	0	1	5	9
○	6	5	2	3	2	5	5	8	36	83
△	3	6	0	2	1	0	0	1	13	100
×	0	0	0	0	0	0	0	0	0	-
									54	-

◎:Exceedingly attained ○:Attained △:Substantial Progress ×:Unfulfilled

Land use, land use change and forestry (LULUCF) sector

Background

The forestry sector accounts for the largest share (about 72%) of Indonesian GHG emissions, mostly due to CO₂ emissions from deforestation (SNC 2009)¹.

Indonesia's total forested area is estimated to be 137.09 million ha² (MOFR 2008)³, covering approximately 70% of the country. Indonesia has the world's third largest area of tropical forest and the most species-rich forests in Asia. Forestry has contributed 3–4% to Indonesia's GDP over the past 10 years and about 120 million people are defined as forest-dependent. However, Indonesia's forest resources are not contributing as they should to poverty reduction, economic and social development, and environmental sustainability. Forest areas are threatened with degradation, fragmentation, and destruction; a quarter of the state forest area has no tree cover. Indonesia continues to experience a high, though declining, annual rate of forest loss.

Indonesia's forests hold about 5,897 million tonnes of carbon in their biomass (FAO 2009)⁴ and account for 80% of the carbon stock in soils and vegetation in the country (DFID/World Bank 2007)⁵. The sustainable management of these forests is critical to global climate change mitigation.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix sets targets and actions for the forestry sector in view of the following outcomes: (i) Carbon absorption capacity is increased through the reforestation activities of 2007–2009; (ii) deforestation and degradation is reduced through the scheme of REDDI; and (iii) forest management is improved. Nine actions/targets were listed in CY2009 in order to achieve these outcomes. The results of CY2009 actions' attainments in the LULUCF sector are summarized in Figure 1.

1 The Republic of Indonesia 2009. Summary for Policy Makers: Indonesia Second National Communication under the United Nations Framework Convention on Climate Change (UNFCCC).

2 This figure includes marine conservation reserves. The terrestrial forest area is 133.7 million ha.

3 MOFR 2008. Forestry Statistics of Indonesia 2007.

4 FAO 2009. State of the World's Forests 2009.

5 DFID/World Bank 2007. Indonesia and Climate change: Executive Summary. Working paper on current status and policies.

LULUCF Sector



◎:Exceedingly attained ○:Attained △:Substantial Progress ×:Unfulfilled

Figure 1. CY2009 Actions' Attainments in the LULUCF Sector

- There appears to have been some difficulty in achieving the maintenance targets for Gerhan, which may be related to the fact that the funding provided for maintenance by the Central Government is relatively low and may not be sufficient to motivate some district governments. However, on P-1 (Maintenance-1: weeding, fertilizing, pest control, and replanting—300,270 ha planned) 270,250 ha were finished. On P-2 maintenance, 165,256 ha out of the 177,465 ha planned were achieved.
- Good progress has been made in conducting a review of Gerhan, with two major commissioned studies and four field surveys completed. The results have been shared at two events with MOFR officials.
- Although the spatial plan for Central Kalimantan is yet to be finalized, this has not stopped the provincial government from undertaking a range of initiatives to rehabilitate the former ex-Mega Rice Project area, including banning fires for land preparation.
- 27 REDDI pilot projects are being designed or implemented.
- The Ministry of Forestry has issued a Ministerial Decree on Mechanism and Procedures of REDD under UNFCCC Framework.
- Indonesia's Readiness-Plan, which sets out its REDD strategy, has been approved by the FCPF.

- The establishment of KPH models is progressing well with the support of the Acceleration Team created in 2009. A decree on KPH management institutions as well as norms, standards, and procedures for forest management now needs to be issued. Training programmes for KPH technical officers are required and ways of securing finances for KPHs in their first years of operation need to be examined.
- The Directorate of Forest Fire Control has taken the initiative to draft a Presidential Instruction that will ensure the synergy of all the relevant ministries and agencies in combating fire.
- The Ministry of Forestry and Public Works has agreed on a Government Regulation on Integrated Watershed Management, which will shortly be signed by the President.

Energy sector

Background

Indonesia is one of the fastest growing archipelagos among the ASEAN economies, with around 1.2% growth in annual population and 5% in annual GDP, coupled with 7% growth in annual energy demand. The energy sector plays a vital role in fuelling Indonesia's development. The energy sector (which includes the industry sector) accounts for about one-fourth of the country's total GHG emissions and is still rapidly growing. Fossil fuel combustion accounts for around 98% and non-fossil-fuels account for the remaining 2% of the total emissions of the energy sector.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix includes 11 specific actions in the energy sector. Some of the actions for CY2009 have already been achieved while others need further progress before the target can be attained. The results of CY2009 actions' attainments in the Energy sector are summarized in Figure 2.

Energy

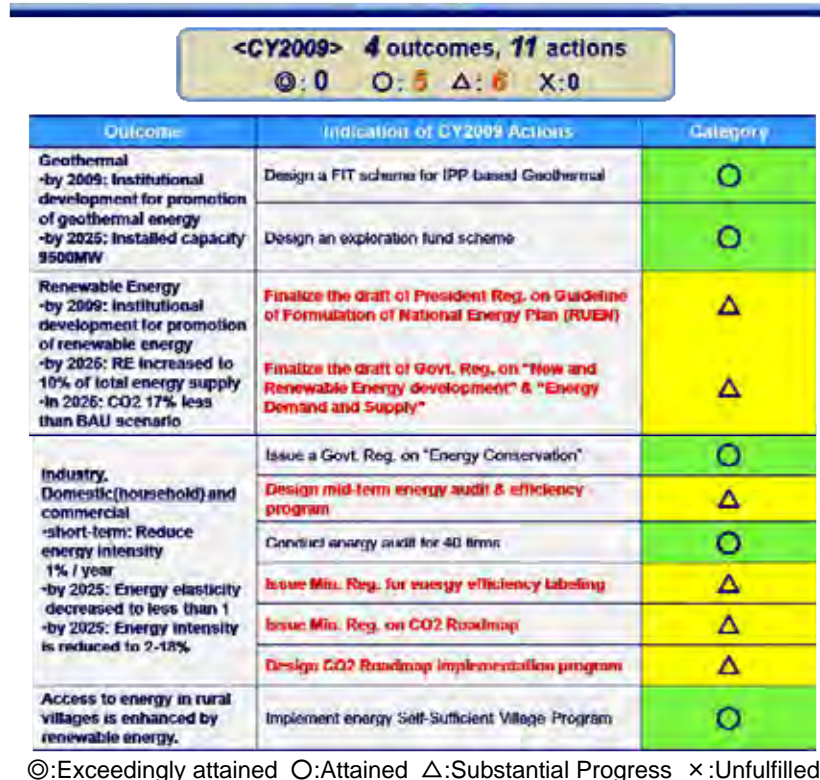


Figure 2. CY2009 Actions' Attainments in the Energy Sector

- Ministerial Regulation No. 32 Year 2009 on the Purchase Standard Price of Electricity Power by PT PLN (Persero) from Geothermal Electricity Power Station was issued on 4 December, 2009.
- Bappenas and KfW have initiated a Risk Mitigation Study that includes a geothermal exploration fund scheme. Bappenas and KfW have completed Part A (geotechnical) of this study, which includes an exploration fund scheme that targets all greenfield projects in Indonesia. Part B (risk management structure) was finalized in February 2010, and Part C (Procedure) in March 2010.
- The Presidential Regulation on Guideline for formulating RUEN, drafted in October 2009, is under a revision process with stakeholders both within and outside DEN; this is expected to be finalized soon.
- The first round (MEMR internal review process) of the draft governmental regulations on 'energy tariff and incentive policy of new-renewable energy' and 'demand and supply' has been completed. Because circumstances have been changed by the establishment of the Directorate General for New and Renewable Energy under MEMR, the content and placement of these regulations are likely to change.
- Ministerial Regulation No. 70 Year 2009 on Energy Conservation was issued on 16

December, 2009.

- The JICA Study on the mid-term energy audit and efficiency program has been started and is scheduled to have been completed by June 2010.
- An energy audit for 40 firms was carried out for CY2009.
- Technical guidance for CFLs was revised and submitted for internal review to be issued as a Ministerial Regulation. Technical guidance for TVs and for Refrigerators is under a revision process.
- The drafted ministerial regulation for a CO₂ roadmap for the cement sector is expected to be finalized by July 2010; this is expected to reflect the results of studies by METI Japan and AFD. The MOI aims to draft a ministerial regulation and a CO₂ roadmap for the steel sector by the end of 2010.
- A study by METI Japan to improve the CO₂ roadmaps for both the steel and cement sectors was completed by March 2010 after a series of site visits and an analysis of technology options. AFD has completed the first stage of the study to improve the CO₂ roadmap for the cement sector; the second stage of this study (six months) was launched in February 2010 along with the drafting of the regulation.
- The DME Program was implemented in 208 villages for CY2009 by various line ministries.

Water Resource Management sector

Background

Several climate change studies have suggested that the maximum and minimum temperatures have increased consistently with significant decreases and/or increases in rainfall in many parts of Indonesia, with different, but significant, trends in different areas. In addition to the observed rise in sea level, a rise in sea level by varying degrees was also predicted in many coastal areas of Indonesia, leading to inundation and salt water intrusion in coastal cities. Due to this variability and change in the climate, the water balance in most of Java and the eastern islands of Indonesia is now in deficit for most of the year. Also, more districts are projected to have water scarcity problems in the future.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix sets out four specific actions related to legal and institutional reforms in the water resources management sector. The anticipated outcome of these policy actions is to improve water resource management in an integrated manner to strengthen resilience to increasing drought and flood risks, specifically in nationally strategic river basins on Java Island. The results of CY2009 actions' attainments in the Water Resource Management

sector are summarized in Figure 3.

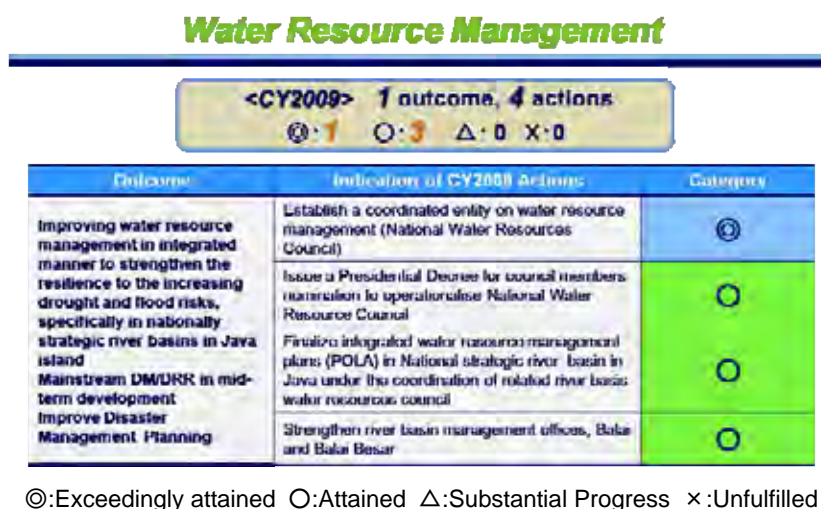


Figure 3. CY2009 Actions' Attainments in the Water Resource Management Sector

- The National Water Resources Council (NWRC) was established by and started functioning as stipulated in Law No. 7 2004. The first plenary meeting of the NWRC was held in July 2009; the second plenary meeting, at which the national water resource policy was discussed, was held on 14 April, 2010. The NWRC has already finished certain important tasks such as the formation of three special ad-hoc committees, the finalization of the draft of national water resource policy and the proposal of groundwater zoning.
- Presidential Decree (No. 6/2009) on council members' nominations to operation NWRC was issued.
- The preparation and finalization of Integrated Water Resources Management Plans (POLA) in four national strategic river basins on Java Island continues with substantial progress having been made. Among the four POLA, one has been finalized for ministerial decree, two have been presented to the Governor, and one is under review by a special committee. Of the target of 69 POLA, with one in each national river basin, 58 POLA have been prepared and 3 have been finalized at the national level.
- The strengthening of river basin management offices (Balai and Balai Besars) is a continuing process in which notable progress has been made. One hundred and twenty-one young engineers were recruited by December 2009 and were dispatched to Balai and Balai Besars in April 2010, after having finished their internship in the seven directorates of the PU. Moreover, some of the staff of the Balai and Balai Besars has been trained as a result of JICA support. The 'Dissemination Unit of Water Resource Management and Technology (DURMT)' is already in operation and has begun to provide training to the staff from all the Balai and Balai Besars.

Water Supply and Sanitation sector

Background

The waste sector; including solid and liquid waste generates about 11% of overall GHG emission in Indonesia according to the SNC report in 2009. Of this, 97% is CH₄ emission, comprising industrial wastewater treatment and discharge (84%), domestic wastewater treatment and discharge (7%), and unmanaged solid waste disposal (8%). Obviously, it is imperative to improve the wastewater quality from industries through implementing regulations and introducing appropriate treatment technologies and incentives, but it is not covered in this sector of the ICCPL Policy Matrix. The ones covered in this sector are the domestic wastewater and solid waste, which require intensive focus in mitigating the impacts as the emissions from these sectors are projected to increase steadily in association of the economic and population growth under a BAU scenario.

In addition to the GHG emissions, water supply and sanitation sector, including wastewater, drainage and solid waste management, also has a strong linkage with adaptation. Firstly, the quality of these services affects human health in the ways in which infectious diseases can be communicated. In fact, the number of water- or vector-borne diseases is increasing year-by-year. Secondly, these services are also essential to minimizing the damage caused by floods, which has actually affected about 2 million people in the last 15 years and has resulted in USD 1.6 billion in economic loss according to the SNC report. No doubt improving the services and management systems of this sector, as well as integration of each service in terms of designing and management, are essential in minimizing the damages caused by floods and diseases.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix sets five specific targets for improving water supply, waste water, and drainage management. The results of CY2009 actions' attainments in the Water Supply and Sanitation sector are summarized in Figure 4.

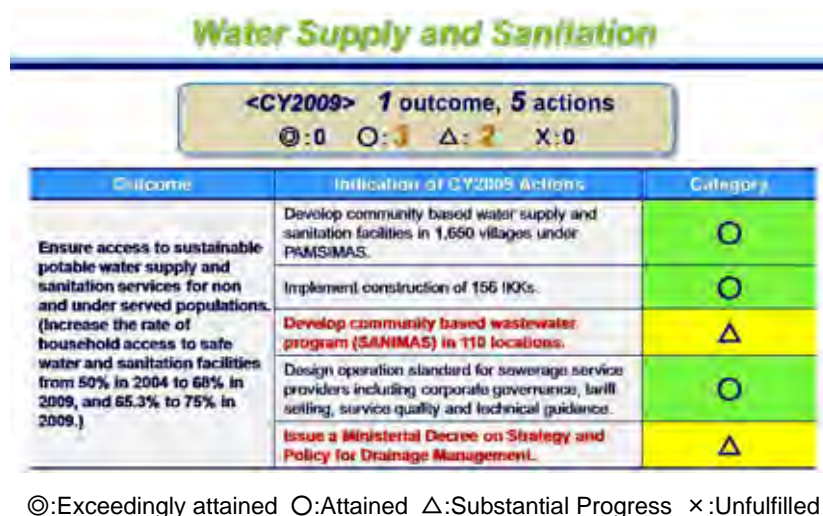


Figure 4. CY2009 Actions' Attainments in the Water Supply and Sanitation Sector

- All of the targeted 1,650 PAMSIMAS projects (100%) have been initiated; 1,556 projects (94%) have completed preparatory work and have signed contracts with the PU; 1,483 projects (90%) have received the first tranche of the budget, and 1,373 projects (83%) have completed implementation as of May 2010.
- A total of 174 IKK projects were implemented which exceeds the target of 156. However, it will take a few more years to commence operations because the completed work is only for water intake and treatment plants; the installation of water distribution pipes by the local governments will take time, which requires steady monitoring and follow up.
- Ninety-seven SANIMAS projects (88%) are being implemented and are expected to commence operations in 2010. The number of projects has not reach the stipulated target of 110 because application from local governments is limited due to the discouragingly large cost-sharing ratio. However, the number of projects is going to increase to more than 400 a year from 2010 onwards as a special allocation fund (DAK) amounting IDR350 billion is allocated for the sanitation sector, of which a large portion will be shared for SANIMAS projects. Now, the challenge is to setup a management system to implement such a large number of projects efficiently with limited staff.
- A 'draft management criteria for sewerage service providers' was prepared by a JICA study team in January 2010 in cooperation with the PU. Actual improvement of sewerage services and expansion of sewerage coverage areas through application of the new criteria are the remaining challenges.
- The concept of urban drainage and flood management promoted by the Directorate General of Human Settlements (DGHS) in the unissued Ministerial Decree on Strategy and Policy for Drainage Management is being incorporated in the Government Regulation on River Management, which is being prepared and going to be issued in 2010 by the Directorate

General of Water Resources (DGWR) through coordination of both DGs.

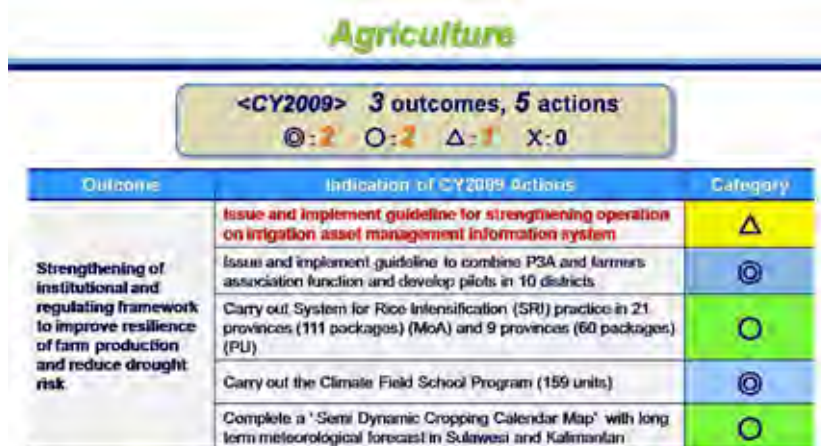
Agriculture sector

Background

Agriculture contributes to a significant portion of Indonesia's economy: Its share in total GDP and employment was reported at 12.9% in 2006 and 43.3% in 2004, respectively (ADB 2009)⁶. However, the nation is witnessing a decreasing trend of land fertility and water availability and has been struggling to feed its people because of the food price leap in the past three years, which has caused a decrease in food security (Hadar, 2009)⁷. Climate change is making such situations more challenging for agriculture. Extreme climate events in Indonesia are normally associated with El Niño Southern Oscillation (ENSO), the frequency of which is reported to be increasing (ADB 2009)⁸. To ensure the nation's food security and to safeguard its economy, the implementation of appropriate climate policies in agriculture is urgently needed.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix lists five targets in the agriculture sector. These targets are aimed at strengthening the institutional and regulating framework in order to improve the resilience of farm production and reduce drought risk. Most targets in CY2009 have been achieved as of February 2010. The results of CY2009 actions' attainments in the Agriculture sector are summarized in Figure 5.



⊙:Exceedingly attained ○:Attained △:Substantial Progress ×:Unfulfilled

Figure 5. CY2009 Actions' Attainments in the Agriculture Sector

6,8 ADB 2009. The Economics of Climate Change in Southeast Asia: A Regional Review. Manila: ADB.

7 Hadar, Ivan A. 2009. Food security in RI: Time for policy change. Article published in the Jakarta Post, 28 April, 2009.

- A draft ministerial regulation on the irrigation asset management system was prepared in October 2009 and is expected to be approved in August 2010 (as of May 2010).
- The guideline for combining P3A and the farmers' groups was issued; however, it is currently under revision in consultation with the PU. A pilot project of LEPLI (Lembaga Ekonomi Pertanian Lahan Irigasi⁹) was launched in 14 districts (nine provinces) in CY2009. A case study was conducted to assess the effectiveness of each group's activity, the situations in which these activities take place, and the feasibility of merging the groups in the same year.
- As scheduled, all 111 packages by the MOA and 60 packages by the PU related to SRI (System of Rice Intensification) were implemented.
- Both the DGFC and the DGLWM of the MOA completed their target units of Climate Change Field Schools. In addition, the DGLWM achieved an additional 18 units by utilizing funds from another donor.
- Dynamic Cropping Calendar Maps were developed in both areas (Sulawesi and Kalimantan) as planned.

Disaster Management and Disaster Risk Reduction sector

Background

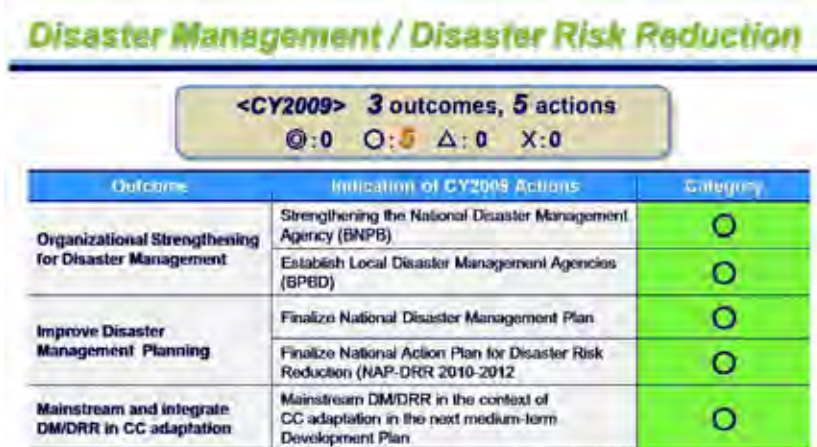
There is an urgent need to strengthen climate change adaptation policies in Indonesia because Indonesia's geographical features and its agricultural and fishery sectors, in terms of labour absorption, are vulnerable to the impact of climate change. For instance, temperature rise and precipitation change damages the Indonesian economy through increasing flood and drought. SNC warns that the poor are the most seriously affected by the increasing frequency and intensity of climate hazards because their limited resources and access to climate information and technologies limits their capacity to adapt to extreme climate events and future climate change.

Attainments of the CY2009 Policy Matrix

The Disaster Management and Disaster Risk Reduction sector was incorporated into the ICCPL framework from CY2009, with three anticipated outcomes: (i) Organizational strengthening for disaster management, (ii) improving Disaster Management Planning, Implementation and Evaluation, and (iii) mainstreaming the integration of Natural Disaster Management, Disaster Risk Reduction and Climate Change adaptation. The five target actions were achieved. The results of CY2009 actions' attainments in the Disaster Management and Disaster Risk

⁹ The name given to the new village organization: integrating P3A and farmers' groups. Tentative English translation is 'economic and agricultural institution on irrigation land'.

Reduction sector are summarized in Figure 6.



◎:Exceedingly attained ○:Attained △:Substantial Progress ×:Unfulfilled

Figure 6. CY2009 Actions' Attainments in the Disaster Management and Disaster Risk Reduction Sector

The main developments are:

- The institutional strengthening of disaster management is in progress both at the national level and the local level. However, compared to the national agency (BNPB), which completed staff development by CY2009, the local agencies (BPBDs) still have a long way to go before they can function.
- Preparation of the two national plans—the National Disaster Management Plan and the National Action Plan for Disaster Risk Reduction—were completed slightly later than the original date of February 2010. Following their issuance, the GOI needs to encourage and support the local governments in developing action plans.
- The mainstreaming of disaster management and disaster risk reduction in the medium-term development plan has been attained, as the Medium Term National Development Plan includes statements on disaster risk and disaster management measures for the next five years.

Marine, Coral, and Fisheries sector

Background

Indonesia is known as the world largest archipelagic state, with 5.8 million km² of marine area. The estimated climate change impacts to its coastal ecosystem are: Sea level rise; change in surface temperature; change in water acidity; and increased frequency and intensity of extreme events such as tropical storms and high waves. The Indonesian fisheries sector will suffer from an inundation of cultured fisheries areas, loss of economic assets and infrastructure, increased

erosion, and damage to cultured sites and coastal biodiversity in coastal areas and small islands.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix incorporated the Marine, Coral, and Fisheries sector with the outcome of strengthening institutional and regulatory framework in order to manage coastal zones and small islands. All of the specific target actions in this sector were successfully attained. The results of CY2009 actions’ attainments in the Marine, Coral and Fisheries sector are summarized in Figure 7.

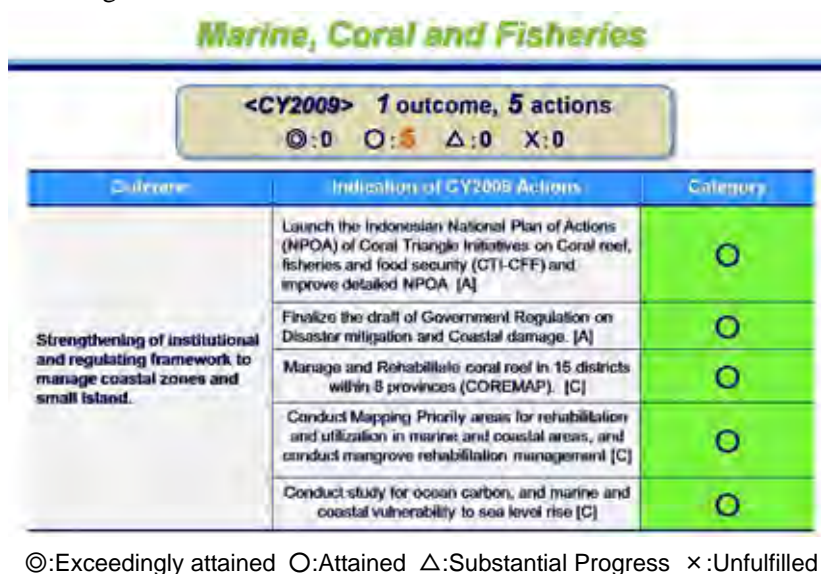


Figure 7. CY2009 Actions’ Attainments in the Marine, Coral and Fisheries Sector

- Under the 10-year roadmap process of the Coral Triangle Initiatives on Coral Reef, Fisheries and Food Security (CTI-CFF), which was committed to by six countries (Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste), the Indonesian National Secretariat for Coral Triangle Initiative (NSCTI) was established with 7 Working Groups. A draft National Plan of Action of Indonesia was finalized. The GOI also set 12 regions as priority and started a series of scientific studies on the management of the fisheries sector and seascapes.
- MMAF finalized the draft of Government Regulation on Disaster Mitigation and Coastal Damage and submitted it to the State Secretariat to be signed by the President and approved and recorded in the State Gazette.
- The management and rehabilitation of coral reefs in 16 districts in eight provinces under the Coral Reef Rehabilitation and Management Program (COREMAP) are being successfully implemented. This is being conducted through the establishment of marine conservation areas in 13 districts, 1,632 community groups, 298 information centres, and 54 sanitation facilities. Additionally, 732 extension workers have been recruited and village

funds and grants have been distributed to 257 villages.

- MMAF and local governments conducted the mapping of priority areas for rehabilitation and utilization in marine and coastal areas and developed tsunami hazard maps in Padang, Painan, Denpasar, Cilacap, and Gorontalo. MMAF and local governments have also conducted mangrove rehabilitation management in 6 out of 12 municipalities (expansion of about 110 ha, planting of 53,500 mangroves).

Cross-sectoral issues

Background

In addition to the above sectors, which address specific areas, climate policies require fundamentals related to both mitigation and adaptation. These fundamentals include institutional arrangements, an understanding of the conditions, preparation of plans and feasibility/pilot studies to design and implement effective on-the-ground actions.

Attainments of the CY2009 Policy Matrix

The CY2009 Policy Matrix includes seven of these essential policies as cross-sectoral issues. Most of the target actions were achieved in CY2009. The results of CY2009 actions' attainments in the Cross-sectoral issues are summarized in Figure 8.

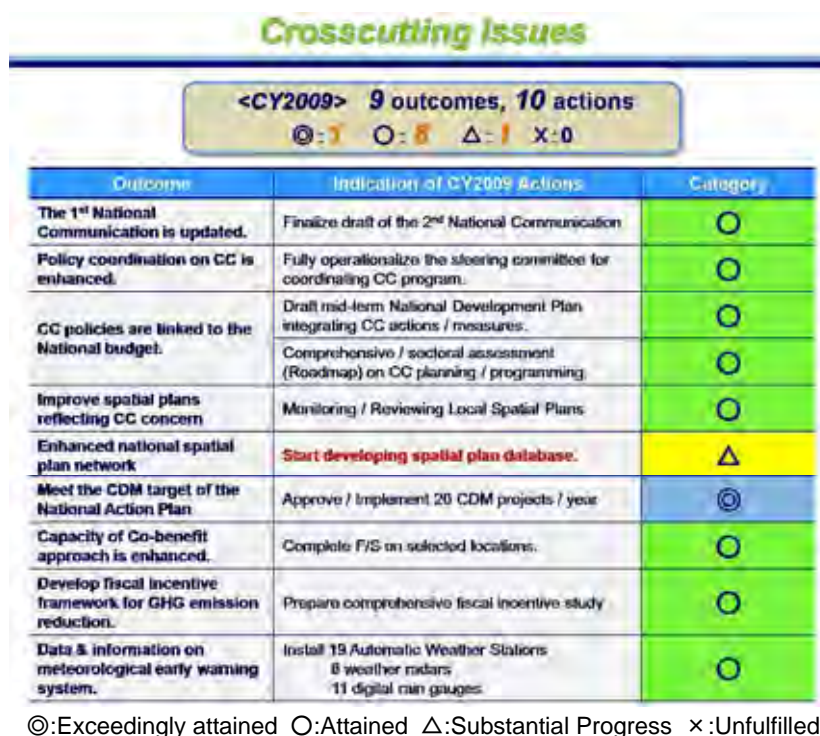


Figure 8. CY2009 Actions' Attainments in the Cross-sectoral issues

- All chapters of the Second National Communication were drafted and the preliminary documents completed in 2009. ‘The Summary for Policy Makers’ of SNC was issued in December 2009. The preliminary documents will be further revised until 2011, when the Second National Communication will be submitted to the UNFCCC.
- Steering committee meetings for the Climate Change Program Loan were convened three times in CY2009. In addition to this, two other steering committees were convened to discuss climate change issues and policies in Indonesia. These two committees were the Steering Committee Meeting for the Climate Change Roadmap and the Steering Committee Meeting for the Indonesian Climate Change Trust Fund.
- More local spatial plans were reviewed than in the previous year, although many remain to be reviewed. Although the efforts of the GOI are ongoing, development of the spatial plan network has been delayed due to delayed bidding/contracting.
- The NC-CDM had 34 projects approved in CY2009. When we consider the results in previous years—5 projects approved in 2005, 6 in 2006, 13 in 2007, and 46 in 2008—this is considered an appreciable trend.
- On-site studies of co-benefit pilots were conducted in October 2009 and January 2010 to collect data in both dry and rainy seasons. The feasibility study report was shared with KLH for consultation in March 2010.
- The Fiscal Policy Office of the Ministry of Finance together with AusAID conducted a study on the fiscal policies necessary to strengthening climate policies in Indonesia. This study was reported on in *Indonesia Green Paper: Economic and Fiscal Policy Options for Climate Change Mitigation in Indonesia* (MOF and Australia Indonesia Partnership, 2009)¹⁰.
- BMKG finished the installation of all equipment planned in CY2009 for meteorological early warning systems.

10 MOF and Australia Indonesia Partnership 2009. *Indonesia Green Paper: Economic and Fiscal Policy Options for Climate Change Mitigation in Indonesia*.

***Analysis of progress/
attainments of policy actions/targets***

1. Mitigation

1.1. LULUCF Sector

1.1.1. Summary of LULUCF Sector

<Outline of Outcome and Indication of CY2009 Actions>

Forestry is listed under the LULUCF sector in the ICCPL Policy Matrix. The anticipated outcomes of the actions specified for this sector are: (i) Carbon absorption capacity is increased through the reforestation activities of 2007–2009, (ii) deforestation and degradation is reduced through the REDDI scheme, and (iii) forest management is improved. Nine actions/targets were planned in CY2009 to achieve these outcomes.

Table 1.1.1. Progress in the LULUCF sector in CY2009 and recommendations

No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
Anticipated outcome 1: <ul style="list-style-type: none"> - Carbon absorption capacity is increased through the reforestation activities of 2007-2009 - Carbon dioxide absorbed of 2007 (CO₂e/year) = 58.6 million ton (*) - Carbon dioxide absorbed of 2008 (CO₂e/year) = 70.2 million ton (*) 			
1	Maintenance of previous planting from Gerhan Program of 2007-2008	Attained	<ul style="list-style-type: none"> - Total maintenance area planned = 477,735 ha, with Rp. 250 billion in new funding and Rp. 394 billion carried over, On P-1 (Maintenance-1: weeding, fertilizing, pest control, and replanting, 300,270 ha planned) 270,250 ha were finished. On P-2 maintenance, 165,256 ha out of the 177,465 ha planned have been achieved. However, Gerhan has experienced underachievement of maintenance targets as local governments may not have sufficient enthusiasm to cover funding shortfalls.
2	Review mechanism and impacts of Gerhan program (2003-2009) and DAK Bidang Kehutanan to strengthen national forest rehabilitation policy for 2010-2014	Attained	<ul style="list-style-type: none"> - Commissioned papers on rehabilitation history and Gerhan mechanism, and field work in Lampung, Sulawesi, Central Java, and Central Kalimantan completed. - Two presentations on results made to MOFR officers.

No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
3	Implement the master plan on peatland: 1. Rehabilitation = 1,600 ha 2. Conservation = finalize coordination with Central Kalimantan Government's spatial planning in order to convert 308,000 ha production forestry into conservation area in Central Kalimantan	Substantial Progress	<ul style="list-style-type: none"> - About 2,650 ha of land maintenance by contractors, some receiving two treatments. - Spatial plan for Central Kalimantan yet to be approved, so change of forest function cannot take place. However, Minister of Forestry and Governor have agreed to work towards a solution. Governor now to give technical direction to provincial offices.
Anticipated outcome 2: - Deforestation and degradation is reduced through the scheme of REDDI			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
4	Conduct REDDI pilot projects	Attained	<ul style="list-style-type: none"> - Twenty-seven pilot projects are being designed/implemented. The MOFR has agreed to pilots by Australia (two locations), GTZ (two locations), KOICA (two locations), TNC (one location), and ITTO (one location), with some progress already having been made. - No pilot has yet been approved as a demonstration activity through the process set out in the REDD Regulation.
5	Issue Ministerial Decree on Mechanism and Procedures of REDD under UNFCCC Framework	Attained	<ul style="list-style-type: none"> - Regulation No. P.30/Menhut-II/2009 on Reducing Emissions from Deforestation and Forest Degradation and Decree Number: P. 36/Menhut-II/2009 regarding Procedures for Licensing of Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests issued. - Guidance needs to be more specific in some areas, e.g. in defining good governance. - Existing pilots should test whether the regulation can actually be implemented.
6	Prepare and submit Readiness Plan (R-Plan) to FCPF (Forest Carbon Partnership Facility).	Attained	<ul style="list-style-type: none"> - R-Plan has been approved by FPCF. - Need to synchronize R-Plan, REDD Regulation, and the forestry sector climate change roadmap.

Anticipated outcome 3:			
- Forest management is improved			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
7	Establish a Model Forest Management Unit in all provinces	Substantial progress	<ul style="list-style-type: none"> - 29 model KPHs proposed for 27 provinces; 13 approved by the Minister in Dec. 2009 - Decree for the establishment of KPH management institutions is being drafted. - Provinces require further support for completing their KPH delineation (engineering designs): 23 provinces, have drafted designs; only 10 designs have been endorsed by the Minister
8	<p>Issue Standard Operation Procedures (SOPs) and equipment standards of the Forest Fire Prevention Guideline</p> <p>Socialize the Forest Fire Prevention Guideline at provincial and district levels</p>	Substantial progress	<ul style="list-style-type: none"> - SOPs were published in 2007 for fire brigades. Further drafting of SOPs was reported in 2009 - Important initiatives are Presidential Instruction on Fires and National Events to demonstrate commitment to combating fires
9	Issue a Government Regulation on Integrated Watershed Management	Attained	<ul style="list-style-type: none"> - PU and MOFR agreed on the contents of government regulation and awaited the President's sign. A coordinating team on Integrated Watershed Management has been established under Bappenas through Decree 52/M.PPN/HK/12/2009. - Two decrees on Integrated Watershed Management have been issued, followed up by socialization at the regional level. It is intended that the watershed management capacity of BP-DAS will be strengthened and that new tasks will be added at these units.

1.1.2. Background of the policy actions/targets

(i) Overall Situation

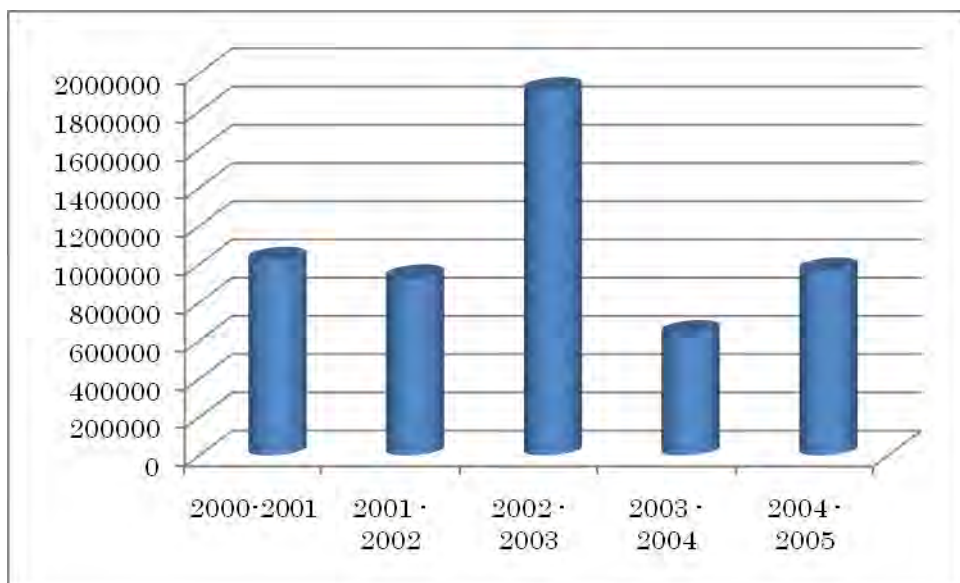
President Susilo Bambang Yudhoyono has set a target of reducing GHG emissions by 26% below BAU levels by 2020. Forestry has been targeted as the main sector for reducing emissions. The National Action Plan Addressing Climate Change recognises that about 60% of Indonesia's greenhouse gas emissions come from the LULUCF sector and that forest protection is important for adaptation. The plan stated that during the time period of 2005–2009, mitigation efforts in the forestry sector would focus on the following five priority policies:

- Preventing illegal logging, which will result in reduced GHG emissions;
- Forest and land rehabilitation, which will increase carbon absorption capacity and conserve carbon stocks. This will also increase resilience and adaptability to extreme climate-related events;
- Restructuring the forestry sector—particularly the forestry industry—and accelerating the development of planted forests (HTI and HTR), which will increase forest carbon absorption capacity;
- Empowerment of communities that subsist on the forest, which will help improve awareness of climate change issues and boost their capacity to adapt to climate-related events;
- Strengthening the determination of forest areas by clarifying forest status, boundaries and institutions, which will help reduce emissions and conserve carbon stocks by reducing illegal activities.

The National Action Plan explains that this mitigation effort is strengthened by policies that use incentive and disincentive mechanisms for local governments to increase forest cover. These efforts include monitoring and evaluation, tackling and preventing forest fires, and sustainable peatland management. Three main areas of mitigation efforts in the forestry sector have been identified: Emissions reductions and increased capacity to absorb carbon; implementation of incentive mechanisms (including REDD); and supporting policies (spatial planning, law enforcement, poverty alleviation, research and development, capacity-building, preparation, and social engineering). The Action Plan for adaptation in the forestry sector outlined in the National Action Plan calls for protection of the forest ecosystem for the continuity of forest services and for the establishment of a genetic bank for endemic plant species.

(ii) Priority Issues

Indonesia has the world’s third largest area of tropical forest and the most species-rich forests in Asia. Forestry has contributed 3–4% to Indonesia’s GDP over the past 10 years¹¹. However, Indonesia’s forest resources are not contributing as they should to poverty reduction, economic and social development, and environmental sustainability. Forest areas are threatened with degradation, fragmentation, and destruction. Although the annual deforestation rate is declining, it still remains a national concern.



Source: MOFR. 2008. *Forestry Statistics of Indonesia 2007*.

Figure 1.1.1. Deforestation rate, 2000–2005 (ha/year)

In its strategy paper ‘Sustaining Indonesia’s Forests’ (2006)¹², the World Bank stated that the forestry sector faces the following key issues:

- Forest loss and forest crime: Up to two-thirds of Indonesia’s forest sector production is based on suspect or undocumented timber sources.
- Industrial timber demand exceeds sustainable supply: While industrial demand is about 60 million m³ round wood equivalent per year, sustainable yield is estimated at 8–9 million m³ per year from existing natural production forests and 3–4 million m³ per year from timber plantations.

11,2 World Bank 2006. *Sustaining Indonesia’s forests: Strategy for the World Bank 2006–2009*. Washington DC

- Inadequate development of the processing sector: Due to old processing technology, especially at plywood mills, the productivity of Indonesia's forest industry is low and waste is high.
- Insufficient and poorly performing timber plantations: Timber supply from plantation forests cannot meet current levels of demand because planting rates and areas are insufficient and because only some plantations produce high quality timber for industrial use.
- Problems with forest sector financing and debt management: There is insufficient due diligence in private sector financing of the forest industry, which has led to the industry's over-capitalization and debts among forestry firms, particularly in pulp and paper, hindering the revitalization of the sector.
- Unclear and insecure access and tenure: The 50–60 million Indonesians who live in the forest zone have uncertain and unprotected rights of access to forest resources. Some of these areas, and other forested areas, are in fact community-managed agroforests, agricultural land, or grassland. These areas are currently regulated as if they still are natural forests or land to be reforested for timber production.
- Landslides and flooding associated with forest degradation: By 2002, a total of 96.3 million ha (54.6 million ha of state forest land and 41.7 million ha of areas outside state forests) of forests and land were degraded.
- Under-resourcing of conservation and biodiversity protection: Although Indonesia has a substantial protected-area network, forest conservation and management have not generally been well-resourced and are not often priorities for local governments under the decentralization framework.
- Corruption: Corruption in the forest sector takes the form of substantial off-budget flows of revenues and taxes and of lack of transparency in the allocation of land and forest use rights.
- Lack of capacity at the regional level: The decentralization of forest authority was marked by disorder and a lack of transparency due to weak planning and institutions. Local governments now need improved capacity for working with the public, identifying and responding to the needs of the public, and running public consultation processes. Local governments also need technical and institutional capacity to manage and protect forests.
- Forest fires remain a threat: In a BAU scenario, an increase in the frequency of forest and land fires can be expected because the extraction of timber from natural forests makes these forests susceptible to drying and because fire continues to be used by smallholders to prepare land for oil palm.

(iii) JICA's and other donors' existing cooperation

Since 2000, JICA's assistance has mostly been directed at strengthening capacity for forest management, the management of national parks and biodiversity conservation, and protection of mangroves, with a focus on forest fires. Assistance has also been provided for revitalization of the timber industry and for policy support.

The main donors to the forestry sector include USAID, GTZ, EU, UNDP, CIDA, DFID, the World Bank, and Australia. They provide assistance and partner with local and international NGOs in a wide range of activities. These activities include involving the local people in forest conservation, forest fire strategies, strategies to combat illegal logging, conservation of biodiversity, national park management, and water resources management. REDD has recently attracted considerable interest from donors, NGOs, and the private sector, all of which are supporting its national preparedness and demonstration activities. There has been a trend of reduced donor funding for projects managed by the Ministry of Forestry and an increase in funding through a variety of civic and non-governmental organizations for forestry governance issues.

The international co-operation projects under the Ministry of Forestry in 2010 are categorised in Table 1.1.2 using the 8 priority strategies for the forestry sector for the period 2010 – 2014.

Table 1.1.2. International co-operation projects under the Ministry of Forestry in 2010¹³

	Security of forest areas	Rehabilitation of degraded areas	Forest protection & fire	Conservation	Revitalization of forest industry	Climate change	Strengthening institutions	Empowerment
Japan	-Support on Forest Resources Management through Satellite Image (JICA) -Facilitating Implementation of the National Forestry Strategic Plan (JICA)	-Revitalizing Ecosystem of Bromo Tengger Semeru National Park (JIFPRO) -Rehabilitation and Regeneration in Paliyan Wildlife Sanctuary(Sumitomo)		-Sub-sectoral Program on Mangrove(JICA) -Strengthening Biodiversity Conservation through Appropriate National Park Management and HRD (JICA) -Promoting Conservation of Selected Tree Species (through ITTO) -Bali Eco-Friendship Forest (JIFPRO)				
World Bank	-Coremap (WB-GEF)							-Community Based Forest and Watershed Management (GEF)
EU	-EC-Indonesia FLEGT Support Project (EU)							
ITTO		-Restoring the Ecosystem Functions of Lake Toba Catchment Area			-Strategy on Developing Plantation Forest -Project on Ramin -Project on Eaglewood -Project on Sandalwood	-Tropical Forest Conservation for REDD		
Australia					-Improving Added Value and Small Medium Enterprise Capacity in the Utilization of Plantation Timber (ACIAR)	- Improving Governance, Policy & Institutional Arrangement for REDD (ACIAR) - Global Initiative on Forests and Climate Assistance to Indonesia (AusAID)	-Public Sector Linkages Programme (CSIRO)	
Others						-Indonesia-UNREDD Joint Programme (UNDP) -Joint Programme for Adaptation and Mitigation of Climate Change (KIPCCF, Korea)	-Integrated Citarum Water Resources Management Investment Project (ADB) -Tropical Forest Research (Tropenbos) -Multistakeholder Programme (UK, DfID)	-Linking Communities in South East Asia to Forestry-Related Voluntary Carbon Markets (FAO)

13 Based on table provided to monitoring team by Directorate of International Co-operation in June 2010.

1.1.3. Analysis of progress and recommendation

Anticipated outcome1:

- **Carbon absorption capacity is increased through the reforestation activities of 2007-2009**
- **Carbon dioxide absorbed of 2007 (CO₂e/year) = 58.6 million ton (*)**
- **Carbon dioxide absorbed of 2008 (CO₂e/year) = 70.2 million ton (*)**

Indication of CY2009 Action 1:

- **Maintenance of previous planting from Gerhan Program of 2007-2008**

By 2002, a total of 96.3 million ha (54.6 million ha of state forest land and 41.7 million ha of areas outside state forests) of forests and land had been degraded. This prompted the MOFR to initiate the National Movement for Forest and Land Rehabilitation Program (Gerhan) in the subsequent year as a ‘people’s movement’ to rehabilitate degraded forest and land. Gerhan will contribute to the medium-term target (2005–2009) of forest and land rehabilitation in 282 priority watersheds, which cover 5 million ha. The long-term target is to rehabilitate 458 watersheds by 2025.

As a ‘people’s movement’, Gerhan aims to motivate a wide range of groups (military, police, attorneys, religious leaders, the private sector, and communities) to participate in land and forest rehabilitation through building a culture of tree-growing in Indonesia. Gerhan’s goal is to conduct an integrated approach to combating various hazards such as flooding, landslides, drought, and forest/land fires. This is a complex approach that assigns roles to the Provincial Forestry Service, the District Forestry Service, the Technical Implementation Units of the DG of Land Rehabilitation and Social Forestry, the DG of Forest Protection and Nature Conservation, universities, NGOs, farmers’ groups, and private contractors.

Although Gerhan’s initial target was 3,000,000 ha, it only had a budget for 2,569,571 ha. The MOFR reported an achievement of 2,009,881 ha. Gerhan was implemented in 33 provinces, 420 districts, and 180 watersheds across Indonesia, with a total budget of Rp. 8.13 trillion.

Table 1.1.3. Target, Allocation and Realization of Gerhan

Fiscal year	Original target (ha)	Allocation in budget doc. (ha)	Realization (ha)	% target to Allocation	Budget (Rp.)
2003	300,000	300,000	295,455	98.48	813,307,688,000
2004	500,000	500,000	464,270	92.85	2,127,975,107,217
2005	600,000	585,936	493,411	84.21	2,319,999,344,000
2006	700,000	71,103	48,410	68.08	1,587,925,399,000
2007	900,000	701,548*	329,752	47.00	3,824,108,747,000
2008	-	335,372**)	115,511	34.44	1,961,364,824,000
Total	3.000.000	2,158,587	1,746,809	80.92	12,634,681,109,217

Source: Cited from Ashadi 2009. Draft report of Gerhan mechanism. Note: * Gerhan multi-year, ** Gerhan 2007 continued (excluded from total).

(i) Analysis of progress/attainments

Table 1.1.4. Monitoring framework for CY2009 Action 1 in the Forestry Sector

Implementation steps	Evaluation indicators	Verification measures
<p>Contract independent assessors to evaluate seedling survival rates</p> <p>Allocation of budget for maintenance by central government</p> <p>Procurement of fertilizer, seedlings, etc.</p> <p>Contracts for maintenance in forest areas; planting by local people in non-forest areas</p> <p>Assessment by Dinas (district forest office) using contractors one year after maintenance</p>	<p>Volume of funding allocated and disbursed for planting maintenance</p> <p>Timing of fund disbursement</p> <p>% of 2007–2008 planting maintained</p>	<p>Monitor data received by MOFR/RLPS from BP-DAS</p> <ul style="list-style-type: none"> Review Gerhan report compiling field data submitted to Bappenas

➤ **Status**

Rp. 250 billion in new funding was allocated to Gerhan for CY2009 and was disbursed from January onwards. Rp. 394 billion had been carried over from previous funds but was not available for disbursement until September.

The RLPS set a target of 477,735 ha for maintenance, consisting of 300,270 ha Program-1 maintenance and 177,465 ha Program-2 maintenance. In November, the RLPS reported to the monitoring team that P-1 maintenance was completed and that P-2 maintenance was being carried out and would be completed by December 2009.

Gerhan data as of January 2010, however, shows that the maintenance target has not yet

been reached. For example, for P-2 maintenance of rehabilitation planting, enrichment planting, and mangroves, of the 129,975 ha planned, only 22,801 ha have been completed. This may be because the maintenance budget is quite small—20% of the total planting budget for the first maintenance activities and 10% for the second. This may provide insufficient incentive to local governments to involve themselves in maintenance. The following excerpt from one of the papers commissioned for the Gerhan review is revealing:

At the lower levels, the commitment and participation of non-forestry actors was similarly low. This was [the] because rehabilitation issue was regarded as having little relevance and connection with the provincial and district socio-political and development priorities. District governments often opted to allocate the targeted GERHAN areas within their jurisdictions for purposes other than rehabilitation, such as oil palm plantations and mining. They provided little financial resources, if any, to support GERHAN implementation.¹⁴

During the Technical Committee Meeting held on 18 February, 2010, the MOFR reported that on P-1 (Maintenance-1: weeding, fertilizing, pest control, and replanting, 300,270 ha planned), 270,250 ha were finished and that on P-2 maintenance, 165,256 ha out of the 177,465 ha planned had been achieved.

➤ **Obstacles/challenges**

Even after the introduction of multi-year funding, the disbursement of carryover funds is slow because decisions on (i) overall budget, (ii) allocation to provinces, and (iii) disbursement of budget are made by the People's Representative Council (*Dewan Perwakilan Rakyat*—DPR). Gerhan-type land and forest rehabilitation programmes are thus affected by lobbying.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Land rehabilitation should be incorporated into the KPH framework as a regular programme that begins with piloting to explore the possibilities for synergy. On 28 January, 2010, the monitoring team organized a sectoral dialogue that was hosted by the MOFR,

14 Herlina Hatanto 2009. *Gerhan and its Challenges: A literature review*.

titled 'Reshaping Rehabilitation Policies in KPH Framework'. During this dialogue, MOFR officials, business associations, and NGOs expressed strong support for the KPH concept and for KPH to be responsible for implementing RHL (*Rehabilitasi Hutan dan Lahan*—Land and Forest Rehabilitation Program). Placing RHL under KPH will improve its performance because the well-designed KPH will then have professionals on the ground with the capacity to: Maintain plantations over the long-term; monitor and report on growth; report on costs and budgets; share technical knowledge from their experiences; develop partnerships with local communities; facilitate local community capacity-building and rehabilitation efforts outside forest land; facilitate controlled access to forest land; and facilitate forest land development on degraded forest (*HTR/Hutan Tanaman Rakyat*).

Indication of CY2009 Action 2:

- Review mechanism and impacts of Gerhan program (2003-2009) and DAK Bidang Kehutanan (Special Allocation Fund for Reforestation) to strengthen national forest rehabilitation policy for 2010-2014

After five years of implementation of the Gerhan project, the MOFR agreed that a review of its mechanism and impacts was needed, with the objective of providing lessons to strengthen future forest and land rehabilitation policy. The MOFR authorised this review, which was supported by AFD and JICA.

(i) Analysis of progress/attainments

Table 1.1.5. Monitoring framework for CY2009 Action 2 in the Forestry Sector

Implementation steps	Evaluation indicators	Verification measures
Planning and design of review by MOFR/AFD/JICA	Completed final report	Collect information from RLPS, DG, and Bappenas
Drafting of TOR		Documents to review:
Data gathering and analysis by review team		• TOR
Drafting of review		• Drafts
Stakeholder feedback		• Final report
Finalization		

➤ **Status**

Good progress has been made towards organizing and implementing a comprehensive review of Gerhan. The review covers Gerhan impacts (technical, social, and economic issues) and the Gerhan mechanism; it involves an extensive review of literature as well as stakeholder interviews and field surveys. Criteria for ensuring that the survey covered a variety of conditions were decided. These criteria included age of stands (from 2003 onwards); forest type (protection, conservation, and communities); geography; funding types; and tenure (state land and private land).

AFD has supported two studies—one on a historical survey of planting programmes in Indonesia and another that is a detailed description of the Gerhan mechanism. Both of these have been completed. Field studies have been conducted in Sulawesi, South Sumatra, Central Java, and Central Kalimantan. A further survey is planned for East Nusa Tenggara. A stakeholder analysis (actors and operators) that covers the roles, expectations, power

relationships, vested interests, etc., has also been completed. This analysis also contains an assessment of institutional performance, which includes the capacities of actors (district government, farmers' groups, planting contractors, NGOs working with farmers' groups, contractors, etc.).

The results of the review were presented to RLPS officials in November 2009 and again at a sectoral dialogue organized by the monitoring team and hosted by the MOFR in January 2010.

The review provides important lessons for the design and implementation of future rehabilitation programmes. The following points have been included:

- Land rehabilitation works well when (i) it meets local demand for wood and non-wood products and (ii) local actors (forest rangers or farmers' groups) are able to take care of maintenance and fire control.
- Not enough attention is paid to the maintenance of large open-access forest land areas after three years; consequently, the results (survival and growth) are poor.
- Since there is no system of monitoring tree growth, there is no way of learning and sharing learning from past experiences.
- Professional foresters are needed on the ground to observe, take technical decisions, monitor results, and report.
- Rehabilitation and mitigation efforts should be evaluated in terms of results (as accumulated m³/ha/year), not activities.
- Gerhan-type programmes could be made more effective by expanding the goal of the rehabilitation of critical ecosystems/watersheds to include the provision of economic benefits. Consideration should be given to establishing small woodlots under such programmes.

➤ **Obstacles/challenges**

No major obstacles noted.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Continued efforts are required to ensure that the MOFR has ownership of the review and is committed to reflecting its findings in future rehabilitation programmes.

Indication of CY2009 Action 3:

- **Implement the master plan on peatland:**
 1. **Rehabilitation = 1,600 ha**
 2. **Conservation = finalise coordination with Central Kalimantan Government's spatial planning in order to convert 308,000 ha production forestry into conservation area in Central Kalimantan**

The Mega Rice Project was launched in 1996 in Central Kalimantan with the goal of contributing to the nation's self-sufficiency in rice. It was to do so by converting 1 million ha of peat swamp forest into rice paddies. However, the more than 4,000 km of drainage and irrigation channels that were built led to widespread land subsidence and made the peatland susceptible to fire in the dry season. Additionally, the newly dug canals opened the forests up to illegal logging. In response to these problems, the Mega Rice Project was halted. Presidential Instruction No. 2/2007 on the rehabilitation and revitalization of peatlands in Central Kalimantan then created a master plan on peatland rehabilitation. The Master Plan for PLG¹⁵ Area Conservation and Rehabilitation is part of the 'Integrated' Master Plan for Acceleration of Peatland Development Area Revitalization and Rehabilitation in Central Kalimantan, and consists of three separate master plans: (i) Master Plan for PLG Area Conservation and Rehabilitation, (ii) Master Plan for Cultivation, and (iii) Master Plan for Local Community Empowerment and Transmigration.

(i) Analysis of progress/attainments

Table 1.1.6. Monitoring framework for CY2009 Action 3 in the Forestry Sector

Implementation steps	Evaluation indicators	Verification measures
Detailed design of rehabilitation in target area	Budget allocated (APBN, APBD, donors, etc.)	Collect information from Bappenas, MOFR, MOA, Coordinating Minister for Economics, and Central Kalimantan Government
Engagement of main stakeholders	% of target area rehabilitated	
Allocation of budget	Completed harmonization of spatial planning	Field visit to rehabilitation and conservation areas
Recruitment of contractors		Document review:
Institution building to ensure sustainability of rehabilitation measures		• Budget allocations
Reporting		• Central Kalimantan spatial plans
		• Central Kalimantan Government progress reports on rehabilitation and harmonization with spatial plan

15 The ex-Mega Rice Project area is known in Indonesia as the 'Proyek Lahan Gambut' (PLG).

➤ **Status**

The first action of the rehabilitation of 1,600 ha has been achieved. Maintenance was carried out by contractors on about 1,900 ha of land, with some land receiving maintenance more than once. BP-DAS data includes GPS coordinates for the planted sites, species, and contractors' names. The main species planted was Belangiran (*Shorea belangiran*). Jelutung (*Dyera costulata*) was planted in one village.

Table 1.1.7. Maintenance of Gerhan planting in ex-Mega Rice Project in 2009

Location			Activity	Performance (ha)	
Village	Sub-district	Watershed		Plan	Achievement
Paduran Sebangau	Sebangau Kuala	Sebangau	Maintenance T-1: Reforestation	50.00	50.00
Jabiren	Jabiren Raya	Kahayan	Maintenance T-1, II, III: Enrichment	400.00	400.00
Sidodadi	Maliku	Kahayan	Maintenance T-1, II, III: Reforestation	400.00	400.00
Dandang	Pandih Batu	Kahayan	Maintenance T-1, II, III: Reforestation	400.00	400.00
Paduran Sebangau	Sebangau Kuala	Sebangau	Maintenance T-1, II, III: Reforestation	400.00	400.00
Dandang	Pandih Batu	Kahayan	Maintenance T-1, II, III: Enrichment	400.00	400.00
Parahangan	Kahayan Tengah	Kahayan	Maintenance T-1, II, III: Enrichment	200.00	200.00
Paduran Sebangau	Sebangau Kuala	Sebangau	Maintenance T-1, II, III: Enrichment	400.00	400.00
Paduran Sebangau	Sebangau Kuala	Sebangau	Maintenance T-1, II, III: Reforestation	50.00	50.00
Gohong	Kahayan Hilir	Kahayan	Maintenance T-1, II, III: Reforestation	50.00	50.00

Source: Pulang Pisau Regency, Central Kalimantan (unpublished record as of February 2010).

With regard to the second action, the process of converting forest function from production forest to conservation forest is hindered by the fact that the spatial plan for Central Kalimantan is yet to be approved. Once this is approved, the conversion in forest function will be automatic.

Efforts are being made to resolve the spatial planning problem. The Governor and Minister met on 24 January, 2010 and agreed to work towards a solution. Technical reports for implementing the Master Plan have been drafted and the provincial government is now undertaking consultation to provide input into its planning for the ex-Mega Rice Project

area. The consultation will include Bappenas and donors.

Although the spatial plan is yet to be approved, provincial offices are implementing a number of programmes related to the rehabilitation of land in the ex-Mega Rice Project area. These programmes include provincial regulations banning fires for land preparation; the issuance of a directive to intensify tree planting; rehabilitation under the AusAID funded REDD project (the Kalimantan Forests and Climate Partnership project, which covers 120,000 ha in Block A¹⁶); support of pro-community programmes (e.g. *Hutan Kemasyarakatan* (social forestry), *Hutan Rakyat* (private forestry), and *Hutan Desa* (village forestry)); intensification of small-scale plantations; and the promotion of non-burning land preparation using chemical and mechanical methods. Further, funds are being provided by the Australian and Dutch governments for radar scanning of the entire ex-Mega Rice Project area in order to map the precise topography. This is expected to help establish a baseline and identify the most effective sites for canal blocking.

➤ **Obstacles/challenges**

The Basic Law on Spatial Planning UU 26/2007 mandated that all provinces would have spatial plans by April 2009 and that all districts would have spatial plans by April 2010. Revision activities for these provincial spatial plans fall into two categories:

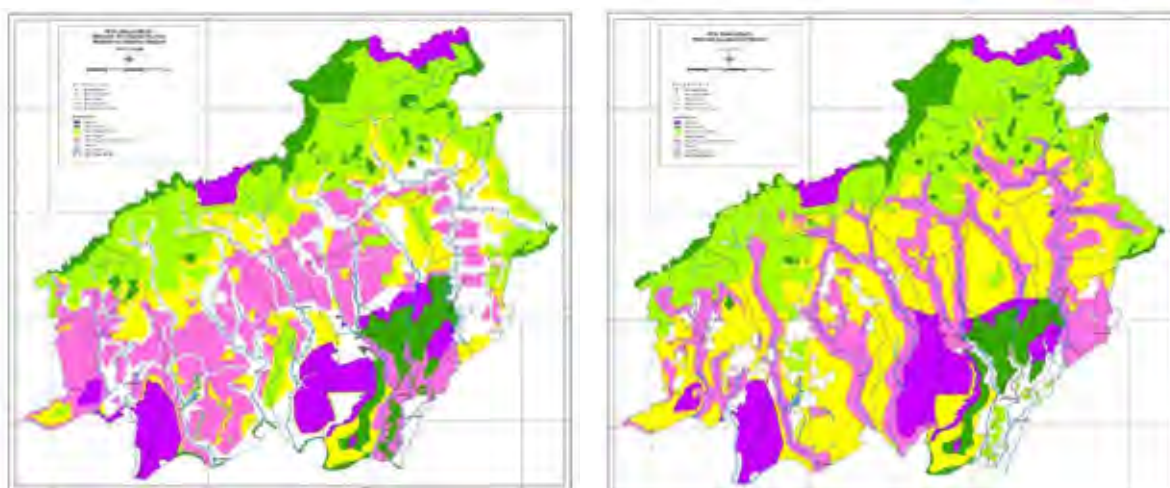
1. Provinces *not* proposing changes to the state forest area and
2. Provinces proposing changes to the state forest area (these can be further subdivided as follows):
 - a. Changes in forest function
 - b. Changes in forest use (from forest to non-forest land)

Any proposals for changes must follow the mechanism outlined in UU 41/1999, the Basic Law on Forestry, which refers to spatial planning in Article 19. According to Article 19, the DPR must approve proposals that have significant, wide, and strategic impacts. These proposals are likely to include any large transfer of land from forest to non-forest use. Incidentally, Central Kalimantan and Gorontalo are the only provinces whose revisions have been referred to the DPR. The proposals are first reviewed by the Integrated Team for Regional Spatial Planning Revision (*Tim Terpadu Perubahan Rencana Tata Ruang Wilayah*). The proposals that proceed to the DPR for approval must later be approved by the MOFR. Thereafter, the PU must adjust the spatial plan and the MOHA must approve

16 Although the project cost for Block A is about A\$ 25 million, only A\$ 18 million has been secured.

the revised plan, which is then legalized through provincial regulation. The MOFR will then replace the existing provincial map of forest area.

Currently, almost all of the 15.3 million ha of land in Central Kalimantan is designated as forest land. The Governor has proposed that 44% of this land be allotted to non-forest uses and 56% to forest uses. The MOFR, however, has proposed that only 33% of this land should be allotted to non-forest uses, one half of which (16.5%) should be non-forest area and the other half of which (16.5%) should be convertible forest area. The MOFR submitted the results of the work on the Central Kalimantan spatial revision proposal to the DPR. After this, the Governor called for a hearing with the DPR at which he objected to: 1) 16.5% being the status of convertible forest area and 2) forest areas where the governor and district heads had issued licenses for conversion to estate crops, etc. (about 2 million ha) being retained as forest area. The DPR's decision was to request the Minister of Forestry to coordinate closely with the Governor.



Source: Unpublished Map, Integrated Team for Regional Spatial Planning Revision, January 2010.

Figure 1.1.2. Spatial planning maps proposed by the Governor (left) and by MOFR (right)

(ii) Recommendations

➤ **Recommendations for ensuring impact**

The issue is more political than it is technical.

➤ **Recommendations for beyond 2010**

It would be useful for the MOFR to develop guidelines on peat forest management that can later be incorporated into a national strategy on sustainable peatland management, as called

for in the National Action Plan Addressing Climate Change (2007). A review of the permit allocation process for oil palm and timber plantation developments and of spatial plans to optimize degraded land for oil palm and timber plantation development would significantly contribute to emissions reduction. An accurate mapping of peat swamp forests and an improvement in the emissions and removals factors for peatlands is also necessary.

Anticipated outcome2:

- Deforestation and degradation is reduced through the scheme of REDDI

Indication of CY2009 Action 4:

- Conduct REDDI pilot projects

The decision of the 13th COP on ‘Reducing emissions from deforestation in developing countries: approaches to stimulate action’ encouraged UNFCCC Parties to build capacities for 1) data collection, 2) emission estimations and monitoring, and 3) undertaking demonstration activities to enhance forest carbon stocks. The Policy Matrix indicators for REDD in Indonesia (REDDI) reflect the COP13 REDD decision.

The target area for REDD, as specified in the National Action Plan Addressing Climate Change (2007)¹⁷, is 23.63 million ha for 2007–2009, 6.15 million ha for 2009–2012, and 10 million ha for 2012–2025. Although it is unlikely that the target for the first period will be met, once the regulatory framework has been established, the number and coverage of REDD pilots could increase rapidly because of strong interest from local governments, donors, NGOs, and the private sector.

Indonesia’s approach to REDD is to establish a national system for monitoring, assessment, reporting, and verification, but to implement this system at the sub-national level. This is because although the MOFR retains a high level of administrative power, responsibilities for forest and land use have been devolved and are now shared by all levels of government. The national REDD strategy to implement this approach has been developed through the work of the Indonesia Forest Climate Alliance (IFCA) and the MOFR in designing Indonesia’s R-Plan.

17 KLH 2007. National Action Plan Addressing Climate Change.

(i) **Analysis of progress/attainments**

Table 1.1.8. Monitoring framework for CY2009 Action 4 in the Forestry Sector

Implementation steps	Evaluation indicators	Verification measures
<p>Submission of proposals to Minister of Forestry by REDDI pilot project proponents</p> <p>REDD Commission assesses proposals and advises the Minister</p> <p>Minister to reject or approve the proposal by issuing REDD Implementation License</p> <p>Commencement of the pilot project by the proponent</p>	<p>Number of REDD Implementation Licenses issued by Minister of Forestry</p> <p>National REDD carbon registry</p>	<p>Monitor progress of registering and implementing REDDI pilot projects</p> <p>Collect information from implementing agencies—AusAID, GTZ, JICA, , MOFR, and REDD Commission</p> <p>Document review:</p> <ul style="list-style-type: none"> • Evaluations of pilot project proposals by REDD Commission • Licenses granted by Minister of Forestry for commencement of REDDI pilot projects • Recommendations by local government for implementation of pilot projects • Project-related documents (design plans, budgets, agreements, and workshop/meeting minutes) • Regulation for the creation of a national REDD carbon registry • Independent reports and commentary

➤ **Status**

The Central Government is not directly implementing REDD pilot projects. Rather, it has constructed the legal framework and guidelines for the project proponents (government, forest timber product utility license holders, holders/managers of right forests, managers of customary forest, and heads of forest management units) to propose and implement demonstration activities (see Ministry of Forestry Regulation No: P.68/Menhut-II/2008 on Reducing Emissions from Deforestation and Forest Degradation).

There are 9 REDD demonstration activities which went through the approval process regulated in P.30/Menhut-II/2009. These activities are being implemented by development partners including AusAID, GTZ, KOICA, The Nature Conservancy, and International Tropical Timber Organization. Besides them there are at least another 27 voluntary REDD projects (non-demonstration activities).¹⁸ The Japanese government is proposing REDD pilots for Banyuasin District (Sembilang National Park, South Sumatra) and Musi Rawas District (Kerinci Seblat National Park, Sumatra).

¹⁸ Oral presentation by Wandojo Siswanto, a senior advisor to MoFR, at The 9th Meeting of the Asia Forest Partnership & Asia Forest Dialogue 2010, Bali, Indonesia 4 - 6 August 2010

➤ **Obstacles/challenges**

There are some shortcomings in the legal framework and guidance for REDD demonstration activities, which have been discussed below.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

It is important that MOFR encourages the project proponents to submit their pilot project proposals for formal endorsement through the process set out in P.30/Menhut-II/2009. This will help identify ways of strengthening the formal endorsement process.

➤ **Recommendations for beyond 2010**

In addition to piloting, Indonesia is taking steps to develop its national REDD system. These efforts, which include the establishment of a national registry, a Forest Resource System (FRIS), and an Indonesian National Carbon Accounting System (INCAS), must be continued. In addition, efforts to develop both national and sub-national (provincial) baselines should be continued.

Indication of CY2009 Action 5:

- **Issue Ministerial Decree on Mechanism and Procedures of REDD under UNFCCC Framework**

The MOFR has asserted itself as the lead agency to develop and regulate REDD in Indonesia. Rather than attempting to develop a single comprehensive piece of legislation to govern REDD activities, the MOFR has chosen to draft several successive pieces of legislation, each with a restricted scope. The regulations of this framework have been summarized in the following table in the order in which they have been issued as of August 2009.

Table 1.1.9. The regulations on REDD as of August 2009

Regulation or Decree	Date issued
Ministry of Forestry Regulation No: P.68/Menhut-II/2008 on the Implementation of Demonstration Activities on Reduction of Emission from Deforestation and Degradation	11 December, 2008
Ministry of Forestry Decree establishing the Ministry of Forestry Working Group on Climate Change/WG-FCC (SK.13/Menhut-II/2009)	12 January, 2009
Ministry of Forestry Regulation No. P.30/Menhut-II/2009 on Reducing Emissions from Deforestation and Forest Degradation	1 May, 2009
Ministry Of Forestry Decree Number: P. 36/Menhut-II/2009 Regarding Procedures for Licensing of Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests	22 May, 2009

(i) Analysis of progress/attainments

Table 1.1.10. Monitoring framework for CY2009 Action 5 in the Forestry Sector

Implementation steps	Evaluation indicators	Verification measures
Drafting of Decree on REDD procedure by MOFR	Issued Decree on REDD procedures	Collect information from MOFR FORDA
Rounds of stakeholder consultations	Issued additional regulations necessary for implementation of REDD	Interview stakeholders who made submissions on regulation drafts
Revisions to reflect consultations		Document review:
Review by MOFR Bureau of Legal and Organization		<ul style="list-style-type: none"> • Final Ministerial Decree and its appendices • Subsequent REDD Regulation (e.g. on benefit distribution)
Endorsement by the Minister of Forestry		

➤ **Status**

This action was completed, with one relevant regulation and one relevant decree issued in 2009.

Ministry of Forestry Regulation No. P30/Menhut-II/2009 on Reducing Emissions from Deforestation and Forest Degradation

This regulation, hereafter referred to as the ‘REDD Regulation’, defines the purpose of REDD activities as twofold: 1) to prevent and reduce emissions from REDD in an effort to strengthen forest governance and 2) to restrict the occurrence of deforestation and forest degradation. The regulation specifies a wide range of forest categories in which REDD activities can be undertaken. It opens up the possibility for national and international entities to be ‘REDD implementers’. Regional governments can also propose and coordinate REDD activities when they have agreements with national entities.

REDD requirements for different forest categories have been specified; they mostly consist of legal documentation, evidence that the location criteria specified are met, and evidence that a REDD implementation plan has been developed. A recommendation from the regional government is required for REDD activities in customary forest, rights forest, and village forest. The appendices of the regulation provide guidelines for the recommendation and REDD implementation plan, and criteria for REDD locations.

The application, verification, and approval process involves a submission to the Minister by the REDD implementer, an assessment of the application by the REDD Commission, a decision by the Minister on approval within 14 days of receipt of the assessment results, and the commencement of REDD activities by the implementer within 90 days of the receipt of approval. Guidelines for the assessment are provided in an appendix. The REDD Commission is required to assign an independent assessor that has been accredited by the National Accreditation Committee to verify the report within 14 days of receiving it. If all requirements are met, the REDD Commission publishes tradable carbon emissions reduction certificates within 30 days of receiving the verification report. Allowance is made for adjusting the system to a future global REDD mechanism.

Ministry Of Forestry Decree Number: P. 36/Menhut-II/2009 Regarding Procedures for Licensing of Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests

This decree was issued because earlier regulations had specified sequestration and storage

of carbon in production and protected forests as one form of environmental service and because earlier regulations had also specified that a license was required for the exploitation of this service in these forest types.¹⁹ This decree describes the business of carbon sequestration and/or carbon storage as one form of the commercial utilization of environmental services in production and protected forests. It specifies types of business activities for sequestration (e.g. tree planting) and storage (e.g. lengthening of cutting rotation, increasing protection, and conservation areas) separately for production forests and protection forests. It details the process for license requests by providing the format of the application, stipulating the required accompanying documents, and identifying who the application must be submitted to. This process is described for both areas, with and without pre-existing licenses. The decree also regulates the distribution of income from selling carbon credits.

Funding for the community is to be managed by a trust fund, according to good governance principles, by the local community together with the village government. The good governance principles, however, are not defined. The only consideration given to the issues of leakage and permanence is that 1) project development is to be facilitated by the local forestry extension officer for security in the forest area and 2) the project developer can choose to insure the project.

➤ **Obstacles/challenges**

The MOFR provided the opportunity for consultation in drafting the REDD Regulation. It organized stakeholder consultations in July 2008 and accepted input through email and other means of communication. Drafts of the REDD Regulation were posted on the Ministry of Forestry website before and after the consultations. Further input through public consultation was sought in April 2009, before the regulation was finalized. However, while some organizations are supportive of the work undertaken by the MOFR in developing the regulations, others are more critical, arguing that inadequate attention has been paid to the rights and interests of indigenous and other forest-dependent people. In March 2009, the United Nations Committee on the Elimination of Racial Discrimination (CERD) criticized the draft REDD Regulation for being incompatible with the rights of the indigenous peoples. This problem is difficult to resolve as it calls for a revision of the Basic Law on Forestry. There are other areas where strengthening of the guidance for REDD

¹⁹ Government Regulation 6/2007 authorizes provincial and district governments to issue environmental services licenses (IUPJL) that can include permits for storing and absorbing carbon both in production and protection forests.

demonstration activities can be provided without such a fundamental revision. There is a general lack of clarity and detail in the stipulations of the regulations that are specific to communities, especially with regard to their capacities (institutions, organizations, collective decision, conflict management, access to information, and rights). Although the REDD Regulation lists improving community welfare as a REDD objective, the current guidance with respect to community welfare is weak. A similar lack of detail is found in P. 36/Menhut-II/2009 with respect to specification of the good governance principles for managing the trust fund in which the community share is deposited. The regulatory framework also lacks provisions for conflict resolution and accepting and handling grievances.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Guidance is needed on the good governance principles by which to manage community trust funds, the minimum capacity required at village level to allow REDD activities to start, the way this will be monitored, and who will monitor it.

Indication of CY2009 Action 6:

- **Prepare and submit Readiness Plan (R-Plan) to FCPF (Forest Carbon Partnership Facility)**

The objective of the World Bank's Forest Carbon Partnership Facility (FCPF) is to build capacity for REDD in developing countries and test a programme of performance-based incentive payments. Its 'Readiness Mechanism' is intended to assist participating countries in developing an FCPF endorsed 'Readiness Package' that consists of a REDD strategy and implementation framework, a monitoring system, and a published reference scenario. The Readiness-Plan (R-Plan) is intended as a framework to be used by countries in setting up a clear plan, budget, and schedule for developing REDD readiness to reduce emissions from deforestation and forest degradation. The R-Plan template has nine components as basic building blocks; separate plans or terms of reference must be designed for each of these components.

(i) Analysis of progress/attainments**Table 1.1.11. Monitoring framework for CY2009 Action 6 in the Forestry Sector**

Implementation steps	Evaluation indicators	Verification measures
Drafting of R-Plan by Ministry of Forestry team	R-Plan accepted by FCPF	Collect information from MOFR FORDA, World Bank, UN-REDD and MOFR REDD Commission
Workshops and consultations to receive stakeholder input	Broad stakeholder support of R-plan in Indonesia	Interview stakeholders that made submissions on R-Plan drafts
Revision of draft		Document review:
Submission of draft R-Plan to FCPF		<ul style="list-style-type: none"> • R-Plan drafts and final version • FCPF Evaluation Report on R-Plan • Stakeholder commentary on R-Plan
Comments on R-Plan by FCPF		
Formal submission of draft R-Plan to FCPF		
Review of R-Plan by FCPF Participants Committee and Technical Advisory Panel		
Further revision if requested or if objections raised		
Re-submission		
Official acceptance by FCPF		

➤ **Status**

The Ministry of Forestry Climate Change Working Group prepared Indonesia's R-Plan and sent it to the FCPF in April 2009 to seek grant funding of USD 3.5 million. At the 3rd meeting of the Participants Committee of the FCPF from 15–18 June, 2009, the decision on Indonesia's R-Plan had been left pending. The R-Plan has since been approved.

➤ **Obstacles/challenges**

Not applicable.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

There is now a need to synchronise the R-Plan, the REDD Regulation and Decree, and the draft roadmap for mainstreaming climate change in the forest sector (this roadmap is currently being developed by the MOFR). The REDD working group under the MOFR is currently not functioning and needs to be reformed and given the task of synchronising the aforementioned documents.

Anticipated outcome3:

- Forest management is improved

Indication of CY2009 Action 7:

- Establish a Model Forest Management Unit in all provinces

Indonesia's Forestry Long-term Development Plan describes the creation of a strong institutional framework as one of its main objectives. One step towards this goal would be the creation of forest management units (*Kesatuan-kesatuan Pengelolaan Hutan-KPH*) in order to carry out a major restructuring of the way that forests are managed. A KPH is an area of forest land that is managed to meet a series of explicitly determined objectives in a long-term management plan. The KPHs are intended to be in line with regional independence in an era of decentralization, using principles of sustainable forest management. The long-term target is to establish 340 KPHs by 2025. The medium-term target (2005–2009) is to establish model KPHs in all provinces.

The organization and development of a KPH is a long and challenging process. The concept of the 'model KPH' was introduced as a step towards achieving a fully functioning KPH. The model is essentially the embryonic form of the KPH and will be developed into the actual KPH structure at the site level. The medium-term strategic forestry plan (RENSTRA 2005–2009) states that by the end of 2009, at least one model KPH must have been established in each province of the country.

(i) Analysis of progress/attainments**Table 1.1.12. Monitoring framework for CY2009 Action 7 in the Forestry Sector**

Implementation steps	Evaluation indicators	Verification measures
Provincial government creates the engineering design, i.e. the proposed delineation for the KPH	No. of provincial governments that drafted preliminary model KPH designs	Collect information from MOFR Forest Planning and Programming Agency DG and Bappenas
MOFR approves proposed delineation	No. of KPH model designs approved by Minister of Forestry	Meeting with provincial and district governments
Selection of one delineated KPH in each province as a model		Meeting with GTZ
Development of action plan by district and province		Review of KPH legal framework.
Approval of action plan by MOFR		Document review: <ul style="list-style-type: none"> • Data compiled by MOFR Forest Planning and Programming Agency • Provincial government model KPH planning and design documents • Budget allocations • Records of provincial level stakeholder consultations

➤ **Status**

Twenty-nine model KPHs have been proposed for 27 provinces (2 provinces have proposed 2 model KPHs each). In December 2009, 13 model KPHs were approved by the Minister; the others have finalized or are finalizing their proposals before submission to the Minister. Endorsement of the outstanding model KPH can be expected once a decree is issued by the MOFA that instructs sub-national governments to establish KPHs as additional administrative units.

As of December 2009, engineering designs—which set out the no., types, and boundaries of KPHs in each province—had been drafted by 23 provinces; 22 designs had been endorsed at the provincial level; and 12 designs had progressed to finalization after review by the MOFR. Ten of these designs have now been approved by the Minister. The other provinces have made little or no progress.

Table 1.1.13. Progress in the establishment of model KPHs, December 2009

FMU MODEL	DISTRICT/CITY	FMU MODEL DESIGN	DESIGNATION OF FMU MODEL
KPH MODEL POCUT MEURAH INTAN	Kab. Aceh Besar	√	
KPHP MODEL MADINA	Kab. Mandailing Natal	√	
KPHP MODEL KUANTAN	Kab. Sijunjung	√	
KPHP MODEL PELALAWAN	Kab. Pelalawan	√	
KPHL MODEL KARIMUN	Kab. Karimun	√	
KPHP MODEL SUNGAI BERAM HITAM	Kab. Tanjung Jabung Barat	√	KPHP* MODEL SUNGAI BERAM HITAM
KPHP MODEL MUKO-MUKO	Kab. Muko-Muko	√	
KPHP MODEL SUNGAI SEMBULAN	Kab. Bangka Tengah	√	
KPHP MODEL LAKITAN	Kab. Musi Rawas	√	KPHP MODEL LAKITAN
KPHP MODEL LALAN	Kab. Musi Banyuasin	√	KPHP MODEL LALAN
KPHP MODEL REG. 47 WAY TERUSAN	Kab. Lampung Tengah	√	KPHP MODEL REG. 47 WAY TERUSAN
KPHL MODEL BALI BARAT	Kab. Jembrana, Kab. Buleleng dan Kab. Tabanan	√	KPHL** MODEL BALI BARAT
KPHL MODEL RINJANI BARAT	Kab. Lombok Barat dan Kab. Lombok Utara	√	KPHL MODEL RINJANI BARAT
KPHP MODEL ROTE NDAO	Kab. Rote Ndao	√	
KPHP MODEL SINTANG	Kab. Sintang	√	KPHP MODEL SINTANG
KPHP MODEL GUNUNG BONDANG	Kab. Murung Raya	√	
KPHL MODEL TARAKAN	Kota Tarakan	√	KPHL MODEL TARAKAN
KPHP MODEL BANJAR	Kab. Banjarbaru	√	KPHP MODEL BANJAR
KPHP MODEL PULAU LAUT	Kab. Kotabaru	√	
KPHP MODEL POHUWATO	Kab. Pohuwato	√	
KPHP MODEL POIGAR	Kab. Bolaang Mongondow dan Kab. Minahasa Selatan	√	KPHP MODEL POIGAR
KPHP MODEL DAMPELAS TINOMBO	Kab. Donggala dan Kab. Parigi Moutong	√	KPHP MODEL DAMPELAS TINOMBO
KPHP MODEL TANA TORAJA	Kab. Tana Toraja	√	
KPHP MODEL UNIT III LAKOMPA	Kab. Buton	√	KPHP MODEL UNIT III LAKOMPA

FMU MODEL	DISTRICT/CITY	FMU MODEL DESIGN	DESIGNATION OF FMU MODEL
KPHP MODEL BUDONG LEBBO	Kab. Mamuju	√	
KPHP MODEL WAE SAPALEWA	Kab. Maluku Tengah	√	
KPHP MODEL GUNUNG SINOPA	Kab. Halmahera Utara dan Kota Tidore Kepulauan	√	
KPHP MODEL YAPEN	Kab. Kepulauan Yapen	√	KPHP MODEL YAPEN
KPHP MODEL SORONG	Kab. Sorong	√	
Total		29	13

Source: MOFR Database as of January 2010. Note: *KPHPs are KPHs that primarily manage production forest; **KPHLs are KPHs that primarily manage protection forest.

Table 1.1.14. Progress in FMU designation (provincial engineering designs), December 2009

FMU DESIGN	FMU PRE ALLOCATION	FMU DESIGNATION PROPOSAL	FMU DESIGNATION
- NAD			
- North Sumatera	- North Sumatera		
- West Sumatera	- West Sumatera	- West Sumatera	- West Sumatera
- Jambi	- Jambi		
- Bengkulu	- Bengkulu		
- Bangka Belitung	- Bangka Belitung	- Bangka Belitung	- Bangka Belitung
- South Sumatera	- South Sumatera		
- Lampung	- Lampung	- Lampung	
		- DI Yogyakarta	- DI Yogyakarta
- Bali	- Bali	- Bali	- Bali
- West Nusa Tenggara	- West Nusa Tenggara	- West Nusa Tenggara	- West Nusa Tenggara
	- East Nusa Tenggara		
- West Kalimantan	- West Kalimantan		
- East Kalimantan			
- South Kalimantan	- South Kalimantan		
- Gorontalo	- Gorontalo	- Gorontalo	
- North Sulawesi	- North Sulawesi	- North Sulawesi	- North Sulawesi
- Central Sulawesi	- Central Sulawesi		
- South Sulawesi	- South Sulawesi		
- South East Sulawesi	- South East Sulawesi	- South East Sulawesi	- South East Sulawesi
- West Sulawesi	- West Sulawesi	- West Sulawesi	
- Maluku	- Maluku		
- North Maluku	- North Maluku		
- Papua	- Papua	- Papua	- Papua
- West Papua	- West Papua	- West Papua	- West Papua
23	22	12	10

Source: MOFR Database as of January 2010

Ten KPHs have also been established for conservation forests, although these are not model KPHs.

Table 1.1.15. KPHs established in conservation forest, December 2009

KPHK (Conservation KPH)	Regency/City	Province
TN BERBAK	Kab. Muaro Jambi and Kab. Tanjung Jabung Timur	Jambi
TN UJUNG KULON	Kab. Pandeglang	Banten
TN GUNUNG HALIMUN SALAK	Kab. Lebak	Banten
TN MERU BETIRI	Kab. Bogor and Kab. Sukabumi	West Java
TN ALAS PURWO	Kab. Jember and Kab. Banyuwangi	East Java
TN BALI BARAT	Kab. Banyuwangi	East Java
TN GUNUNG RINJANI	Kab. Buleleng and Kab. Jembrana	Bali
TN TANJUNG PUTING	Kab. Lombok Barat, Kab. Lombok Timur and Kab. Lombok Tengah	NTB
TN KUTAI	Kab. Kotawaringin Barat and Kab. Kotawaringin Timur	Central Kalimantan
TN BUNAKEN	Kab. Kutai Tengah and Kab. Kutai Timur	East Kalimantan
	Kab. Minahasa and Kota Manado	North Sulawesi

Source: MOFR Database as of January 2010

To accelerate KPH development, the MOFR issued Decree No. SK.25/Menhut-II/2009 to establish a Working Group consisting of MOFR Echelon One heads, Indonesian National Council of Forestry, the association of foresters, and academia. The district governments present their KPH proposals to the Working Group at the National KPH Consultation Meetings. This is an important process for the districts because they receive direct feedback from national experts, they can learn from the presentations of other districts, and they can see the standards that their proposals must meet to be approved.

➤ **Obstacles/challenges**

PP41/2008 regulates the creation of local government institutions and only allows for a maximum of 12 technical offices to be established by the district government. This number has already been reached. The primary obstacle is thus the lack of a directive to instruct sub-national governments to set up KPHs as additional administrative units.

Further, sub-national forestry offices have lost their capacity for planning; they now require capacity-building. Until their capacity is regained, the central government must provide assistance for KPH design and planning. Some districts have viewed the KPH concept as a 'device' of the central government and, therefore, further socialization work is required. The formulation of proposals by the governors is generally slow. In some provinces the change of governors has delayed the submission of engineering designs.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

The Acceleration Team provides important guidance to the district forestry offices. The team, however, may need further resources to visit provinces to better socialize the KPH concept, encourage governors to submit the draft engineering designs, etc.

➤ **Recommendations for beyond 2010**

Decree on KPH management institutions and norms, standards, and procedures for forest management

The issuance of a decree on KPH management institutions and the norms, standards, and procedures for forest management is required.

Staffing of KPH with professionals

The staffing of KPHs by certified professionals is a legal requirement. Significant investment is required to generate the necessary number of professionals needed to staff the over 600 KPHs that Indonesia will have. A six-month training programme for KPH directors is being conducted at the Center of Forestry Education and Training, Bogor. Programmes to train technical professionals for KPHs are now required at regional/provincial levels.

Securing financing for KPHs

KPHs are intended to be self-funding, which means that each KPH should seek business opportunities and undertake fund-raising. In the first five or so years of operation, however, they will need support from local and national governments in securing adequate finances. The MOFR should now explore options for ensuring financial flow for KPH activities (e.g. by assigning KPHs the responsibility of implementing certain national programmes such as RHL).

Indication of CY2009 Action 8:

- **Issue Standard Operation Procedures (SOP) and equipment standards of the Forest Fire Prevention Guideline.**
- **Socialize the Forest Fire Prevention Guideline at provincial and district levels.**

The National Action Plan Addressing Climate Change sets the target of reducing the number of hotspots in 2006 by 50% by 2009, 75% by 2012, and 95% by 2025. The MOFR's medium-term aims include the operation of information and early warning systems, the prevention and suppression of forest fires at the community level, and significantly reducing the frequency of forest fires in Sumatra and Kalimantan. The Forest Fire Prevention Guideline supports these aims and is based on Government Regulation No. 45/2004 on Forest Protection. This guideline provides assistance on forest-fire-controlling activities that include the prevention, extinguishing, and handling of post-forest-fire and rescue, and that require action at all levels, from national to local.

(i) Analysis of progress/attainments**Table 1.1.16. Monitoring framework for CY2009 Action 8 in the Forestry Sector**

Implementation steps	Evaluation indicators	Verification measures
Drafting of SOPs and equipment standards Regulation to issue SOPs and equipment standards	Regulation issuing all SOPs and equipment standards	Collect information from MOFR Forest Fire Control DG and JICA experts Document review: <ul style="list-style-type: none"> • Drafts and final version of regulation
Planning by MOFR Forest Fire Control for workshops and other socialization initiatives Allocation of budget for workshops Conduct of workshops and reporting of outcomes	No. of workshops (other activities) and no. and types of participants No. of sub-national guidelines developed Sub-national budgetary commitments and initiatives for forest fire prevention	Information gathering on workshops, projects, and other initiatives to socialize the guideline from MOFR Forest Fire Control DG, provincial governments and JICA experts Document review <ul style="list-style-type: none"> • Data compiled by MOFR Forest Fire Control • Workshop records • Sub-national guidelines and records of other initiatives • Sub-national budget allocations

➤ Status

The Forest Fire Brigades (*Manggala Agni*) are using standard operating procedures (SOPs)

that were published in 2007. Some further drafting of SOPs was reported in 2009 along with a plan to divide SOPs into two documents: SOP for activities and SOP criteria and indicators. The socializing of these guidelines was launched with a national workshop in April.

➤ **Obstacles/challenges**

None identified.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Despite all the effort that has gone into fire prevention in Indonesia, fire continues to be used widely for land preparation. Burning also continues to be illegally used in conversion forest. There is thus a need for further resources to spread the use of non-burning land preparation technologies and for more effective law enforcement to combat forest fires.

In addition, the following three plans/targets of the MOFR should be fully implemented:

- The Directorate of Forest Fire Control has drafted a Presidential Instruction to direct all related national and sub-national authorities to take action on fires. The Presidential Instruction will involve the MOA, the MOHA, local governments, and other agencies. The MOFR held a discussion with the MOA, the KLH, the Ministry of Law and Human Rights, and the MOHA before sending the draft to the Cabinet.
- The MOFR aims to have established 163 Peduli Api Communities (volunteer community fire-fighter groups) by the end of 2010. Officials at Sebangau National Park, Central Kalimantan, reported to the monitoring team that the Peduli Api Community played an important role in forest fire control. This initiative should be fully implemented.

Indication of CY2009 Action 9:

- **Issue a Government Regulation on Integrated Watershed Management**

The Forestry Long-term Development Plan, 2006–2025, has the aim of ensuring optimal watershed management to maintain the quality and hydrological functions of forest ecosystems. The Strategic Plan of the MOFR, 2005–2009, aims to improve the welfare and standard of living of the people by establishing watershed management systems that provide sustainability of water preservation. The regulation reflects these goals and was drafted in accordance with the Ministerial Decree on Integrated Watershed Management, 2006.

(i) Analysis of progress/attainments**Table 1.1.17. Monitoring framework for CY2009 Action 9 in the Forestry Sector**

Implementation steps	Evaluation indicators	Verification measures
Align existing draft of regulation with Law on Water Resources (UU 17/2004) Secure agreement from Ministry of Public Works for draft regulation Review by MOFR Bureau of Legal and Organization Endorsement by the Minister of Forestry	Issued Regulation on Integrated Watershed Management	Collect information from MOFR Watershed Management DG, Bappenas, and the Ministry of Public Works Records of meetings between MOFR and the Ministry of Public Works Document review: <ul style="list-style-type: none"> • Records of meetings between MOFR and Ministry of Public Works • Regulation drafts • Final regulation

➤ Status

Disagreement over the draft between the MOFR and the Ministry of Public Works (PU) has arisen because of overlapping authority. The PU has insisted that the regulation conforms to UU 17/2004. Efforts are being made to overcome this problem. At a meeting between the MOFR and the PU on 19 October, 2009, the PU agreed to provide input into revising the draft to further synchronize it with laws on water resources. A coordinating team on Integrated Watershed Management has been established under Bappenas through Decree 52/M.PPN/HK/12/2009. During the Technical Committee Meeting for CCPL that was held on 18 February, 2010, the MOFR reported that the PU and MOFR had agreed on the contents of the government regulation and that they were waiting for the President's signature. Two Decrees on integrated watershed management have been issued, followed up by socialization at the regional level. It is intended that the watershed management

capacity of BP-DAS will be strengthened and that new tasks will be added at these units.

➤ **Obstacles/challenges**

None identified.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

A coordinating team on Integrated Watershed Management has been established under Bappenas through Decree 52/M.PPN/HK/12/2009. It should be tasked with accelerating the finalization of the draft of a regulation that the PU can agree to. The process of gaining PU endorsement of the draft has taken over one year and may not be resolved in the near future without Bappenas becoming more directly involved.

➤ **Recommendations for beyond 2010**

Once the government regulation has been approved, there will be a need for analysis to understand how its implementation will affect all the major sectors related to watersheds.

1.2. Energy Sector

1.2.1. Summary of Energy Sector

<Outline of Outcome and Indication of CY2009 Actions>

The anticipated outcomes of the energy sector are as follows:

(i) Enhanced geothermal power development

The short-term target for 2009 was the improvement of geothermal energy development through private investment; the long-term target for 2025 is to increase installed capacity from 857MW in 2007 to 9,500MW in 2025 (approximately equal to 57.9 million t/year of CO₂ reduction).

(ii) Enhanced utilization of renewable energy

The short-term target for 2009 is to improve ‘the institution of renewable energy development’; the long-term targets for 2025 are to increase ‘the share of renewable energy (including biofuel and excluding geothermal) to at least 10% of total energy supply by 2025, and to reduce CO₂ emission reduction by 17% from BAU by 2025’.

(iii) Reduction in energy intensity

The short-term target is the reduction of energy intensity by 1% every year. The long-term targets are the reduction of energy elasticity to less than one by 2025, and the reduction of energy intensity to 12–18 % by 2025.

(iv) Access to energy, including electricity, is enhanced by using renewable energy in rural villages.

The energy sector has 11 specific actions to be achieved according to the ICCPL Policy Matrix, which are summarized in Table 1.2.1. Some of the actions for CY2009 have already been achieved while other actions require further progress before the target can be achieved.

Table 1.2.1. Progress and Recommendations in the Energy Sector in CY2009

Anticipated outcome 1: Geothermal			
[Short-term target (by 2009)]			
The institution of geothermal energy development through private investment is improved.			
[Long-term target (by 2025)]			
Installed capacity is increased from 857MW in 2007 to 9,500MW in 2025.			
Reduction of CO₂ emission = approximately 57.9 million t/year			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Design a Feed-in Tariff scheme for IPP-based Geothermal development [A]	Attained	<ul style="list-style-type: none"> - Ministerial Regulation No. 32 Year 2009 on Purchase Standard Price of Electricity Power by PT PLN (Persero) from Geothermal Electricity Power Station was issued on 4 December, 2009. A study on Green Paper, which includes an analysis of incentivizing the efficient exploitation of geothermal resources through the Feed-in Tariff scheme was also completed and published by the Ministry of Finance with the support of AusAid in November 2009. - Regularized information exchange between MEMR and MOF is crucial to reaching a consensus on an overall design of the FIT scheme.
2	Design an exploration fund scheme to promote Geothermal development at exploration stage	Attained	<ul style="list-style-type: none"> - Bappenas, with the support of KfW, has initiated a study on an exploration fund scheme under the Risk Mitigation Study. Bappenas and KfW have completed Part A (geotechnical) of the Risk Mitigation Study, including the exploration fund scheme that targets all greenfield projects in Indonesia. Part B (risk management structure) was finalized in February 2010, and Part C (Procedure) in March 2010.

Anticipated outcome 2: Renewable Energy			
[Short-term target (for 2009)]			
The institution of renewable energy development is improved.			
[Long-term target (for 2025)]			
The share of renewable energy (including biofuel and excluding geothermal) is increased to at least 10% of total energy supply in 2025.			
Target for CO₂ emission reduction is 17% from BAU by 2025. (Geothermal and other renewable energy and energy conservation)			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
3	Finalize a Draft of President Regulation on Guideline of Formulation of National Energy Plan (RUEN)	Substantial Progress	<ul style="list-style-type: none"> - Presidential Regulation on Guideline (National Energy Policy) for Formulation of RUEN was drafted in October 2009, but is currently under revision by DEN. The draft can be finalized soon. - The National Energy Policy draft lacks consensus among energy council members due to varied opinions on the different statistics that have been used in the document. Due to the absence of nationally accredited data and statistics in the energy sector, there is always debate among council members that represent different segments of the country. As a matter of fact, Indonesia requires nationally-endorsed and accredited data for publishing the National Energy Policy. It is important to have one single government agency to publish undisputed statistics and data that can be directly quoted in any government document. - No recommendation is forthcoming at this moment for accruing political consensus among DEN members in accepting the document.
4	Finalize Draft Government Regulations of the Energy Law on "energy tariff and incentive policy of new-renewable energy" and "demand and supply".	Substantial Progress	<ul style="list-style-type: none"> - The drafts for both regulations have completed the initial round of internal review at the Bureau of Law within MEMR; they are currently under stakeholder consultation. Due to the establishment of the new Directorate General for New and Renewable Energy under MEMR, the placement and content of these regulations are likely to change.

Anticipated outcome 3: [Short-term target] Energy intensity is reduced by 1% every year. [Long-term target] Energy elasticity decrease to less than one by 2025. Energy intensity is reduced to 12-18 % by 2025.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
5	Issue a Government Regulation on "Energy Conservation"	Completed	<ul style="list-style-type: none"> Ministerial Regulation No. 70 Year 2009 on Energy Conservation was issued on 16 December, 2009.
6	Design a mid-term energy audit and efficiency program, including medium term targets, incentive mechanisms, and monitoring and evaluation framework.	Substantial Progress	<ul style="list-style-type: none"> The JICA Study on mid-term energy audit and efficiency program has commenced, and is scheduled to be completed in June 2010 (1st on-site survey in January, 2nd on-site survey in March, and a wrap-up workshop in May.)
7	Conduct energy audit for 40 firms	Attained	<ul style="list-style-type: none"> 40 audits have been conducted.
8	Issue ministerial regulation(s) for energy efficiency labelling system for CFL, TV, and refrigerator	Substantial Progress	<ul style="list-style-type: none"> Technical guidance for CFLs has been revised and sent back to the Bureau of Law to be converted into a Ministerial Decree. Technical Guidance for TVs and Refrigerators is still in the process of formulating energy efficiency criteria. Placing a higher priority on energy efficient labelling to further expedite the review process is suggested.
9	Issue a ministerial regulation on CO ₂ roadmap	Substantial Progress	<ul style="list-style-type: none"> The drafted ministerial regulation for the CO₂ roadmap for the cement sector is expected to be finalized by July 2010 in order to reflect the results of studies by METI Japan and AFD. MOI aims to draft a CO₂ roadmap for the steel sector and a ministerial regulation in 2010. Expediting the drafting and finalization process of the issuance of a ministerial regulation on a CO₂ roadmap for the steel sector is recommended.

No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
10	Design a CO ₂ roadmap implementation program, including incentive mechanisms, and monitoring and evaluation framework	Substantial Progress	<ul style="list-style-type: none"> - A study to improve the CO₂ roadmaps for both the steel and cement sectors with METI Japan has completed a series of site visits and an analysis of technology options. After the presentation in February, the study was completed in March 2010. - AFD have completed the first stage of a study to improve the CO₂ roadmap for the cement sector; the second stage of this study (six months) was launched in February 2010. - Departmental coordination has been strengthened between MEMR and MOI through conducting study on energy audit.
Anticipated outcome 4: Access to energy, including electricity, is enhanced by using renewable energy in rural villages.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
11	Implement Energy Self-Sufficient Village Program among various line ministries under coordinated monitoring framework	Completed	<ul style="list-style-type: none"> - The DME Program has been implemented in 208 villages.

1.2.2. Background of the policy actions/targets

(i) Overall Situation

The National Development Planning on Climate Change²⁰ categorizes the energy sector along with the forestry sector as priority areas for mitigation in Indonesia. Recent studies indicate that annual emissions from the energy sector totalled 300 million t-CO₂eq in 2006, which is approximately one-fourth of the country's total CO₂ emissions²¹. Table 1.2.2. summarizes the current status of GHG emissions in comparison with other developed and developing countries. While the GHG emission figure is moderate at the moment, the high growth rate of energy consumption (currently 7% per annum²²) and a reliance on the domestic fossil fuel resource base to meet this energy demand indicates that CO₂ emission from the energy sector will continue to rise. In this regard, effective mitigation measures are crucial for achieving deviation from BAU in the emission scenario.

Table 1.2.2. Comparisons of GHG emissions (MtCO₂e)

Emissions sources	United States	China	Indonesia	Brazil	Russia	India
Energy	5,752	3,720	275	303	1,527	1,051
Agriculture	442	1,171	141	598	118	442
Forestry	(403)	(47)	2,563	1,372	54	(40)
Waste	213	174	35	43	46	124
Total	6,005	5,017	3,014	2,316	1,745	1,577

Sources: World Bank, DFID and PEACE, 2007. Indonesia and Climate Change: Current Status and Policies.

The direction of the energy sector can be seen in the various national policies and plans, including the National Action Plan Addressing Climate Change, Presidential Decree No. 5/2006 on National Energy Policy, and the Blueprint on National Energy Management 2005–2025. The Blueprint on National Energy Management 2005–2025 specifies various targets, including increasing the RE component of the energy mix from 4.3% to 15% by 2025 and bringing energy elasticity to below 1 by 2025. The Law of Energy No. 30/2007, which was ratified in August 2007, also envisages the establishment of a National Energy Council (DEN) to formulate the National Energy Policy.

20 National Development Planning: Indonesia Responses to Climate Change 2008.

21 State Ministry of Environment 2007.

22 Energy Policy Review of Indonesia. IEA 2008.

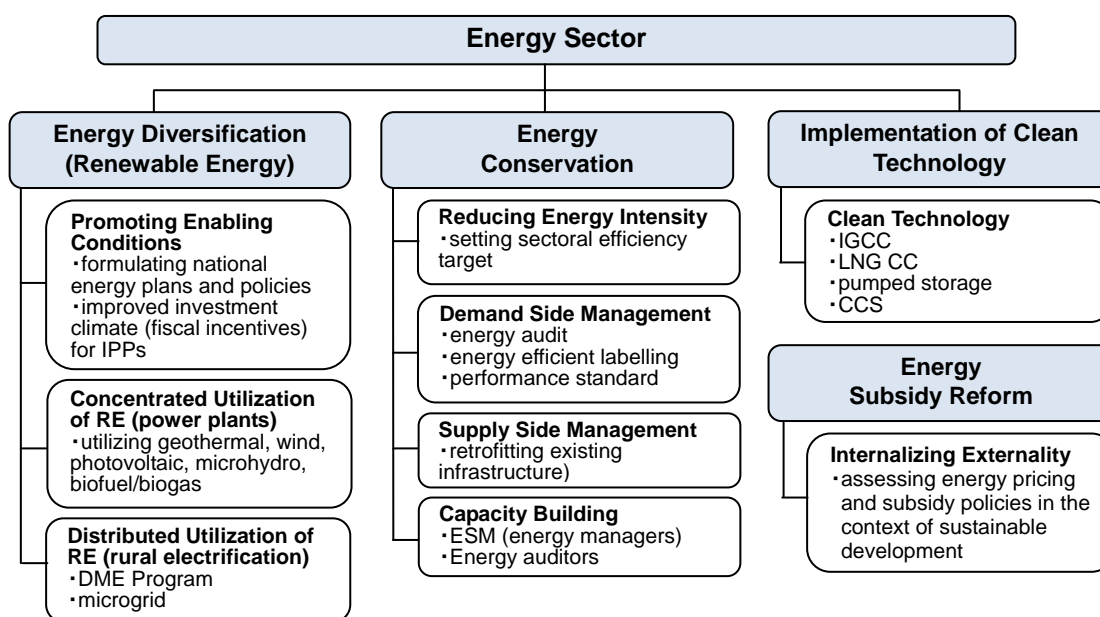
(ii) Priority Issues

The National Action Plan Addressing Climate Change (2007) identifies the three priority pillars of mitigation efforts in the energy sector to be energy diversification, energy conservation, and the implementation of clean technology. For energy diversification, enabling conditions need to be established by reinforcing an institutional framework of renewable development, by improving the investment climate and by providing appropriate incentives. These measures should provide a basis for a realization of optimal utilization of renewable energy in Indonesia. In the meantime, the utilization of renewable energy can be pursued in both a concentrated and a distributed manner; the former explores the utilization and development of renewable energy in a large-scale, on-grid system; the latter is represented by a more localized, off-grid system. In both cases, local involvement and ownership in the planning, developing, or implementing stages of renewable energies are emphasized in the National Action Plan, from the viewpoint of sustainability.

While the pursuit of energy diversification is crucial, energy conservation is an important mitigation measure for the country's reliance on the rich resource base of fossil fuels for domestic energy consumption. Energy conservation should be tackled simultaneously from both the demand side and the supply side. While it is important to set sectoral targets and standards, the implementation of energy efficient technology requires additional fiscal incentives to overcome the initial cost barrier. The National Action Plan also highlights the importance of promoting the informed choice of consumers through policy tools such as the labelling system. Capacity-building is also a crucial component of this pillar.

In addition to above priority pillars stipulated under the National Action Plan, the Advisory and Monitoring team recommends component on exploration options to adjust subsidized energy prices until they are level with market price without jeopardizing small businesses. The low-income section of society to be included in the national priority issue because the fossil fuels subsidy has a substantial impact on incentives for renewable energy development and the promotion of energy conservation, as well as reflecting the recent progress over the discussion of this particular issue in the context of the formulation of National Energy Plan(RUEN) at the National Energy Council (DEN).

The priority pillars of the energy sector are summarized in Figure 1.2.1.



Source: National Action Plan Addressing Climate Change 2007

Figure 1.2.1. Priority Pillars of the Energy Sector in Indonesia

(iii) JICA and other donor's existing cooperation

Numerous donors and stakeholders provide assistance to the energy sector in Indonesia. An overview of the development assistance activities of donors in this sector is presented in Table 1.2.3. From an efficiency perspective, it is crucial that donors draw a clear division of labour and strive to realize aid harmonization.

In addition to a series of existing assistance schemes, JICA has established a Cooperation Program for Climate Change to strategically carry out its assistance schemes for realizing the sustainable development of Indonesia through mainstreaming climate change. Within this programme, the Low Carbon Development Strategic Assistance Project serves at the core as a platform for bringing together relevant technical assistance (TA) projects. NAMA/NAPA and the Renewable Energies/Community Development components of the Project are closely associated with the energy sector. Pilot projects are expected to be carried out by 2012.

Table 1.2.3. Overview of Assistance by Donors in the Energy Sector

Donors	Energy Diversification	Energy Conservation	Clean Technology
Japan	<ul style="list-style-type: none"> ➤ Study on fiscal incentive options for geothermal (JICA) 	<ul style="list-style-type: none"> ➤ Energy conservation (SOME-METI, PROMEEEC) ➤ Industrial energy audit (JETRO) ➤ Study on energy audit and labelling programme (JICA) ➤ Study on Demand Side Management (JICA) ➤ Study on improving CO₂ Mitigation Roadmap (METI, steel and cement) 	
World Bank	<ul style="list-style-type: none"> ➤ Geothermal 	<ul style="list-style-type: none"> ➤ SSM: Upgrading distribution/transmission system 	<ul style="list-style-type: none"> ➤ Pumped-storage
ADB	<ul style="list-style-type: none"> ➤ Regional social development with RE ➤ Geothermal (TA) 	<ul style="list-style-type: none"> ➤ Energy conservation project to reduce losses in power distribution on Java-Bali (co-financing with AFD) 	
GEF		<ul style="list-style-type: none"> ➤ Energy Standard and Labels (ES&L) programme under BRESL²³ for regional energy efficiency labelling 	
UNIDO		<ul style="list-style-type: none"> ➤ Energy Conservation (energy management standard) 	
Germany (KfW, GTZ)	<ul style="list-style-type: none"> ➤ Geothermal (GTZ) ➤ Seulawah Agam Geothermal Plant ➤ Risk Mitigation Study for all greenfield projects (KfW) ➤ DME projects and evaluation (TA/GTZ) 	<ul style="list-style-type: none"> ➤ Input to industry sector for Bappenas Roadmap (GTZ) ➤ Industrial Efficiency 	
England			<ul style="list-style-type: none"> ➤ Study on CCS
France (AFD)		<ul style="list-style-type: none"> ➤ Study on improving CO₂ mitigation roadmap (cement) ➤ Energy conservation project with PLN, aimed at reducing losses in power distribution on Java-Bali by tuning and optimizing capacitors, transmission lines (co-financing with ADB) 	
Australia (AusAid)	<ul style="list-style-type: none"> ➤ Green Paper Development: including Fiscal incentive options for geothermal (MOF and Australian National University) ➤ Provision of trust funds to ADB to support PLN for geothermal power 		

23 BRESL stands for Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency.

Donors	Energy Diversification	Energy Conservation	Clean Technology
	development		
US (USAid)	<ul style="list-style-type: none"> ➤ Preparation of Indonesian Clean Energy Development (ICED), aimed at 200MW installation from renewable sources. Includes TA for training and piloting projects for renewable energy and energy efficiency. 		
Netherlands (Dutch Embassy)	<ul style="list-style-type: none"> ➤ Capacity-building for overall energy planning for local governments in collaboration with universities ➤ Geothermal promotion and implementation with Bappenas (i.e. capacity-building to Pertamina for drilling system) ➤ Mini/microhydro power development through Pnpm programme under World Bank scheme (installation with Ministry of Home Affairs, and technical support unit with GTZ) ➤ Small-scale wind power installation 	<ul style="list-style-type: none"> ➤ Small-scale energy efficiency projects/workshops ➤ Biogas programme (SNV Netherlands) with MEMR to build 10,000 biogas installations (Implementation by Dutch NGOs) 	
Denmark		<ul style="list-style-type: none"> ➤ Energy conservation (energy efficiency assistance in industry and commercial buildings) 	

1.2.3. Analysis of progress and recommendation

Anticipated outcome1: *Geothermal*

[Short-term target (by 2009)]

- The institution of geothermal energy development through private investment is improved.

[Long-term target (by 2025)]

- Installed capacity is increased from 857 MW in 2007 to 9,500 MW in 2025.
- Reduction of CO₂ emission = approximately 57.9 million t/year.

Indication of CY2009 Action 1:

- Design a Feed-in-Tariff scheme for IPP-based Geothermal development

Indication of CY2009 Action 2:

- Design an exploration fund scheme to promote Geothermal development at exploration stage

In accordance with the National Energy Policy (KEN) and the Presidential Decree on National Energy Policy (5/2006), Indonesia aims to achieve energy diversification by modifying its conventional fossil-fuel-based (mostly petroleum and natural gas) energy mix and raising its utilization of RE to 15% of the total primary energy mix by 2025. In particular, with the world's largest reserves (>27,000 MW) available within national boundaries, a full utilization of geothermal power is highly anticipated. Diversifying the energy mix through an emphasis on the utilization of renewable energy sources contributes to the reduction of national dependency on petroleum and CO₂ emission at the national level.

Despite the potential of these policies, high development risks and high initial costs hinder IPP investors from actual geothermal power development in Indonesia. In this regard, the regulatory framework has been strengthened through the issuance of various regulations in CY2008. These regulations include Ministerial Decree No. 11/2008 on Procedures to Determine Working Area for Geothermal Mining, a ministerial ordinance on Geothermal Management Guidance, and the preparation of the draft Ministerial Decree on the Geothermal Permit to Define the Geothermal Permission Requirements for Geothermal Mines Concession (IUP).

To expedite GOI efforts to achieve the energy mix target for 2025, Acceleration Program Phase II (2010–2014) was issued as Presidential Regulation No. 4/2010 on January 2010. This

regulation serves as an important milestone, particularly for geothermal power development in Indonesia, as geothermal power accounts for nearly 40% of the total 10,000 MW development plan of installed capacity. To invest 810 MW of geothermal power development and energy efficiency investment in Indonesia, JICA²⁴, World Bank, IFC, and ADB—has recently utilized the Clean Technology Fund (CTF) under the Clean Investment Fund (CIF) scheme, providing USD 400 million.

Various regulations have also been issued and the institutional framework of geothermal development has been strengthened to improve the investment climate in CY2008. The MEMR issued Ministerial Decree No. 14/2008 on the Selling Price Standard for Geothermal Power Electricity as well as Ministerial Decree No. 269/2008 on the PLN Electricity Production Cost (BPP) (June 2008). These decrees were issued to provide a regulatory framework for IPP to enter the market for geothermal electricity development, particularly in areas with large electricity demand.

Later in CY2008, the MEMR issued a new Ministerial Decree on Geothermal Purchasing Price (No. 5/2009) to replace the Ministerial Decrees on Selling Price Standard for Geothermal Power Electricity (No. 14/2008) and PLN Electricity Production Cost (BPP) (No. 269/2008). PLN's obligation to purchase electricity based on a renewable energy source from IPP is unchanged. The requirement of different cost-functions for different energy sources, however, is an improvement from the previous regulation; the authority given to PLN to determine the cost-functions for purchasing price has the risk of strengthening PLN's position as a price-maker in geothermal power development.

To provide an additional incentive to private investment in geothermal power development, a revision of Government Regulation No. 1/2007 was submitted to Parliament for consultation. This revision includes the establishment of an income tax facility for private investors that provides tax incentives such as net income deduction of total capital investment and acceleration of amortization and depreciation. In addition, the revised Government Regulation No. 62/2008 on investment incentives was also issued on 23 September, 2008 to provide more comprehensive incentives to investors.

Apart from the above regulatory and institutional frameworks, a Feed-in Tariff (FIT) scheme has been considered as a fiscal incentive option in Indonesia. In addition to the designing of a FIT scheme, the JICA study on geothermal development also recommended the development of

²⁴ JICA has provided Yen loan assistance in supporting construction of geothermal power plant facilities by state-owned companies. JICA's assistance is expected to cover over 400 MW of geothermal power development in a next couple of years.

a government-funded exploration fund scheme to address the commercial risk of IPPs at the exploration stage of geothermal power development.

In relation to the fiscal incentives for geothermal power development, the Fiscal Policy Office under the Ministry of Finance (MOF) has also completed a study on an Indonesian green paper in collaboration with the Australian National University (ANU), which was funded by AusAid²⁵. This study analysed and developed economic policy options for climate change mitigation (energy and forestry sector) in Indonesia. The energy sector focuses on the geothermal sub-sector, on which analysis will be conducted on incentivizing an efficient exploitation of geothermal resources through an appropriate Feed-in Tariff scheme.

To further promote geothermal power development through private sector participation, the concept of a greenfield geothermal exploration fund has been considered. Considering the high investment cost for greenfield geothermal exploration (USD 40 million/well), this scheme serves as an effective sharing of the risk burden between the GOI and private investors.

In geothermal power development, policy actions under the CCPL focus on fiscal incentives by means of a FIT scheme and an exploration fund scheme; the monitoring methodologies identified for CY2009 are summarized in Table 1.2.4.

Table 1.2.4. Monitoring framework for CY2009 Actions 2 and 3 in the Energy sector

Implementation steps	Evaluation indicators	Verification measures
<p>Exploring a potential Feed-in Tariff scheme based on the findings from 1) existing green paper activities conducted by Fiscal Policy Office of MOF and the Australian National University and 2) the JICA study on geothermal development</p> <p>Updating existing regulations or decrees to enhance enabling conditions for implementation of a Feed-in Tariff scheme</p>	<p>Drafted Feed-in Tariff scheme</p>	<p>Collecting information from green paper activities from Fiscal Policy Office of MOF</p> <p>Collecting information and reviewing up-to-date information on regulations and decrees surrounding fiscal incentives for geothermal development</p>
<p>Exploring potential exploration fund scheme based on KfW study on geothermal development</p>	<p>Drafted exploration fund scheme</p>	<p>Collecting information from the Bappenas study on exploration fund scheme and from MEMR</p>

²⁵ Ministry of Finance (2009), Ministry of Finance Green Paper. Economic and Fiscal Policy Strategies for Climate Change Mitigation in Indonesia, Ministry of Finance and Australia Partnership, Jakarta.

(i) **Analysis of progress/attainments**

➤ **Status**

In addition to the designing of a Feed-in Tariff scheme, the Ministry of Energy and Mineral Resources (MEMR) issued Ministerial Regulation No. 32 Year 2009 on Purchase Standard Price of Electricity Power by PT PLN (Persero) from Geothermal Electricity Power Station on 4 December, 2009. This regulation sets 9.7 cents/kWh as the standard ceiling price for purchasing geothermal power²⁶. Increased tendering activities of geothermal working areas (WKP) and private sector participation in areas outside existing WKPs has also been observed through the tendering process after the issuance of this regulation.

In the meantime, a joint study on the green paper issued by the Ministry of Finance and AusAid was also conducted. The paper analyses the economic policy actions of mitigation activities, including Feed-in Tariff, for the geothermal sector in Indonesia²⁷.

With regard to the exploration fund scheme to promote geothermal power, Bappenas and KfW have initiated a study on the exploration fund scheme under the Risk Mitigation Study. At this moment, Bappenas and KfW have completed Part A (geotechnical) of the Risk Mitigation Study, which targets all greenfield projects in Indonesia. As scheduled, Bappenas and KfW also completed Part B (risk management structure) of the study in February 2010 and Part C (procedure) in March 2010. The final report is under review by Bappenas, as of June 2010.

➤ **Obstacles/challenges**

The effort of MEMR to set a purchaser price for geothermal power for PLN should be noted. However, three major constraints of the recently issued Ministerial Regulation (No. 32/2009) on Purchase Standard Price of Electricity Power by PT PLN (Persero) from Geothermal Electricity Power Station need to be addressed in order to ensure effectiveness in promoting IPP-based geothermal power development. These constraints are:

1. The regulation has been downgraded from the initially-proposed presidential decree to ministerial regulation, which does not require consensus among line ministries or the signature of the President. Additionally, there is no penalty clause for the

26 The schedule coincides with the end of the 100-day programme under the new Yudhoyono Administration. Some ministries intend to resolve existing issues within the 100-day programme.

27 Building on this green paper, a letter of intent has been signed between the Fiscal Office of MOF and the Treasury, as of June 2010, to update and incorporate three topics into the study: Geothermal power development, budget allocation of renewable energies, and capacity development.

- regulation. Lastly, the enforceability of the regulation might become obscure.
2. The regulation only defines a ceiling price. In a single buyer market, PT PLN has every incentive to purchase geothermal power at the lowest price offered by bidders. While the actual purchase price of geothermal power is likely to be below 9.7 cents/kWh, the current purchase prices may not provide sufficient incentive for IPPs to enter the market. In order to create a Feed-in Tariff scheme, additional political effort might be required to mandate the purchase of geothermal power by PT PLN.
 3. The regulation does not specify how long PT PLN is mandated to purchase geothermal power, contrary to the many other FIT laws introduced in other countries²⁸.

While the Risk Mitigation Study conducted by Bappenas and KfW are proceeding as scheduled, the overall design of the exploration fund scheme, including the coverage regions (partial or national), still has room for discussion and elaboration among stakeholders.

(ii) Recommendations

➤ Recommendations for beyond 2010

It is evident that frequent information exchange and communication between MEMR and MOF is crucial to further discussion on the national FIT scheme and appropriate price-setting. It is also important for the design of a national exploration fund to enhance geothermal power development. Considering the current divergent views among the concerned ministries on incentivizing geothermal power development, it would suffice to include the support of full utilization of the exploration fund as opposed to the introduction of off-taking pricing measures. Coordination among the concerned ministries can be established by holding inter-ministerial meetings on a regular basis, even during energy sector dialogues or the CCPL Technical Taskforce Meetings. These meetings should consider and evaluate potential options and should identify a national direction on implementing geothermal power development that is acceptable to all concerned ministries.

While a regulatory framework for improving investment climate and price-setting for geothermal power has been initiated, it is suggested that policy actions should focus on:

1. Further strengthening of the regulatory framework for improved market conditions to

²⁸ For instance, Germany introduced the FIT scheme under the Renewable Energy Sources Act (RES Act) in 2000, which mandates electricity utilities to purchase RE power for a long-term contract of 20 years. While 63 jurisdictions across the world have implemented the FIT policy, purchase guarantees typically range from 10 to 25 years.

encourage private sector involvement and investment, especially by upgrading regulation on FIT and/or setting numerical quota for PT PLN to purchase power from geothermal energy sources and

2. Implementation of fiscal incentive schemes, including the establishment of the geothermal exploration fund.

To address the ceiling price issue and to further improve the investment climate of geothermal power development, as of June 2010, MEMR is considering the:

1. Issuance of a new ministerial decree by July 2010 to mandate PLN to purchase geothermal power at an agreed rate during the bidding process without any scope of post-bidding price negotiation.
2. Establishment of a new governmental technical unit stipulated under new presidential decree/regulation to cover the incremental cost of geothermal power generation beyond the ceiling price of 9.7 cents/kWh.

While these actions should be perceived as progress beyond CY2009 policy actions, the question remains over the effectiveness of the first component of the new ministerial decree and whether this decree will be strong enough to force PLN to follow this mandate. Another issue is the cross-jurisdiction of the MEMR ministerial decree over PLN, which has been placed under the supervision of the Ministry of State Enterprises (BUMN). The creation of a MEMR-BUMN joint ministerial decree or the upgrading of the decree to a presidential regulation is a potential approach to enhancing the effectiveness of these actions.

An exploration fund with a budget of USD 200 million is being set up to cover the investment risks at the initial exploration stage of geothermal power development. The fund is intended to cover the eastern part of Indonesia.

Anticipated outcome2: *Geothermal*

[Short-term target (by 2009)]

- The institution of renewable energy development is improved.

[Long-term target (by 2025)]

- The share of renewable energy (including bio fuel but except for geothermal) is increased to at least 10% of total energy supply in 2025.
- Target for CO₂ emission reduction is 17% from BAU (Business as usual) in 2025. (Geothermal and other renewable energy and energy conservation)
- Reduction of CO₂ emission = approximately 57.9 million t/year.

Indication of CY2009 Action 3:

- **Finalize a Draft of President Regulation on Guideline of Formulation of National Energy Plan (RUEN)**

The Law on Energy (30/2007) stipulates the establishment of the National Energy Council (DEN), presided over by the President of Indonesia, as the statutory body to formulate national energy policies. This council will replace the former ministerial body of the National Energy Coordination Board (BAKOREN), chaired by the MEMR. The primary objectives of the DEN include formulation of a National Energy Plan (RUEN), setting measures for the energy crisis, and monitoring cross-sectoral energy-related policy implementation to help achieve CO₂ emissions reduction through the enhanced utilization of renewable energy.

Although Article 32 of the Law requires the DEN to be established within six months of its issuance, a delay was observed in CY2008. To expedite this establishment, Presidential Regulation No. 26/2008 on the Establishment and Selection Procedure of Council Members was issued on 7 May, 2008.

The target action and monitoring methodologies identified for CY2009 have been summarized in Table 1.2.5.

Table 1.2.5. Monitoring framework for CY2009 Action 3 in the Energy sector

Implementation steps	Evaluation indicators	Verification measures
Drafting the Presidential Regulation Completing stakeholder consultations Re-drafting the Presidential Regulation	Drafted Presidential Regulation on Guidelines of Formulation of National Energy Plan	Collecting information from MEMR, Fiscal Policy Office of MOF as well as Bappenas

(i) **Analysis of progress/attainments**

➤ **Status**

On 23 February, 2009, the House of Representatives approved the eight selected council members from the non-governmental side. The remaining seven members from the governmental side were selected by March 2009, and DEN was then inaugurated,

DEN is currently working on simultaneously drafting a new National Energy Policy (KEN) and a RUEN²⁹ through a series of meetings. The new KEN provides overall direction and guidance on energy planning from 2010 to 2050; it includes the guideline for formulating RUEN (which has been identified as the CCPL policy action of CY2009).

The first DEN meeting was held on 12 June, 2009, at which vision, ethics, work plan, and other administrative procedures were discussed. The TOR of the guideline for formulating RUEN was approved in the second meeting, held in August 2009. The draft was completed during the third meeting, on 14 October, 2009. The fourth meeting was held in December 2009 to discuss the finalized draft of KEN.

The drafted KEN was brought to Parliament on 20 January, 2010 for a discussion on the contents. DEN will redraft the contents of KEN to reflect the comments of the Members of Parliament and will proceed with public consultations.

Considering the additional time required for the stakeholders of KEN reaching a consensus, it is anticipated that the issuance of KEN and the guideline formulation of RUEN as a presidential decree will not happen before March 2010.

➤ **Obstacles/challenges**

The formulation of a comprehensive energy policy (KEN) that includes the guideline for formulating RUEN may encounter many difficulties since the stakeholders represent different interest groups within and outside DEN. Political consensus is required for certain important issues in KEN such as reforming energy subsidies. DEN members still are debating the timeline of lifting subsidies. Additional time and a series of re-drafting are required to best accommodate in RUEN the interests of different members and reach a consensus before the finalization of the draft.

29 The major reason behind drafting KEN and RUEN simultaneously is to expedite the process. If drafted separately, RUEN will be issued six months after KEN.

Additionally, there is no single source of government-endorsed data and statistics that can be directly and unanimously accepted by all stakeholders. As a matter of fact, plenty of time is wasted in coming to an all-party consensus on certain figures. Lack of single window data clearing window also creates confusion among the stakeholders in Indonesia. In this regard, data and statistics management practice in electricity market in India provides insights as to how Indonesia could address such issue. In India, electricity market data are now centrally available through the Central Electricity Regulatory Commission (CERC). CERC collects and compiles data through all the State Electricity Regulatory Commissions in the country. The SERCs collect annual data from companies through mandatory information disclosure forms. Thus, data from the company level go up the chain to the national level through proper channels and validation. CERC data are considered to be authentic and validated data on the electricity sector in India. This data collection and endorsement process was framed by the issuance of new Electricity Act in 2003, which deregulated the electricity market including whole sale and retail. The Act however was designed in such a way to allow the Government of India to keep the whole market under the supervision of CERC at the central level and SERC at the state level. The main functions of these entities were to 1) monitor the market, 2) justify the price, 3) ensure the return on the investment, 4) settle all disputes between the generators, transmission and distribution companies, and consumers, and 5) to achieve consensus among all the stakeholders regarding all information, data and statistics provided by the generators, transmission and distribution companies. The overall consensus on all related information, data and statistics is achieved by following step-wise process;

Step1: SERC and CERC to collect all the technical, commercial, operational details of the whole market annually through Annual Revenue Requirement (ARR) filing system.

Step2: All these information are disclosed to general public through public hearing and online system, and are discussed over 2 months period of time after ARR filing date is over.

Step3: Any Indian citizen can raise any doubt of the data/figure quoted in the ARR and file a petition.

Step4: Through stakeholder meeting presided by the SERC Chairman, all those reported information are accepted for the particular year.

Step5: Based on those agreed data and statistics, SERC and CERC fix the tariff, rate of return for the investors, subsidies, and all other operational and commercial targets for the operators.

Step6: SERC finally issues separate orders (i.e. Tariff Orders, Regulations for operations) along with verdicts on petitions, which are accepted by all stakeholders.

Through those processes, transparency is ensured and market follows without any further confusion and doubt over the data/figures.

Indonesia can follow by adopting such step-wise mechanism, in particular including the public hearing process to allow Indonesian citizens to scrutinize the information and data the Government comes up with.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

As the progress of the policy action requires political consensus over KEN among DEN members, and since this consensus must be reached among domestic stakeholders under national sovereignty, no external intervention by means of external advisory has been recommended at this point.

➤ **Recommendations for beyond 2010**

The formulation of the RUEN (national energy plan) should be followed by the development of the regional energy plan (also RUEN) while ensuring consistency with the national energy plan. This is important to realizing the required power development and meeting the long-term goals of increased share of renewable energy and reduction of CO₂ emission.

A single-source government-endorsed data clearing centre needs to be established immediately to minimize the confusion and concerns of stakeholders over the authenticity and acceptability of data.

Indication of CY2009 Action 4:

- **Finalize Draft Government Regulations of “New and Renewable Energy Development” and “Energy Demand and Supply”**

The Law on Energy No. 30/2007 stipulates the issuance of government regulations for

1. Provision and Utilization for enhancing utilization of new and renewable energy (Articles 22 and 30),
2. Enterprise for supply and utilization of energy (Articles 23, 24, and 30), and
3. Energy Conservation to provide incentives and disincentives to energy consumers and producers (Article 25)

within one year of the issuance of the Law. In response, three government regulations (PP) have been drafted as follows: 1) New and renewable energy, 2) energy demand and supply, and 3) energy conservation.

In CY2008, the Government Regulation on ‘new and renewable energy’ was drafted and underwent the processes of stakeholder consultation, internal review within the Bureau of Law in the MEMR, and inter-ministerial consultation. A presidential or ministerial decree on energy tariff and incentive will follow the issuance of the regulation on ‘new and renewable energy’.

In the meantime, the Government Regulation on ‘energy demand and supply’ has also been drafted and has undergone several rounds of stakeholder consultation, followed by the internal review process at the Bureau of Law in the MEMR.

The target action and monitoring methodologies identified for CY2009 are summarized in Table 1.2.6.

Table 1.2.6. Monitoring framework for CY2009 Action 4 in the Energy Sector

Implementation steps	Evaluation indicators	Verification measures
Drafting the Presidential Regulation Completing stakeholder External review by the Ministry of Law and Human Rights	Issued regulations of ‘new and renewable energy development’ and ‘energy demand and supply’	Collecting information from MEMR Documents to review: Draft regulations (if obtained)

(i) **Analysis of progress/attainments**

➤ **Status**

As of February 2009, the drafts for both regulations are still in the internal process, as summarized in the diagram.

Figure 1.2.2. Summary of Progress towards Issuance of Governmental Regulations

Government Regulation	Internal Process			External Process	
	Step 1— Drafting Regulation (MEMR)	Step 2— Stakeholder Consultation	Step 3— Internal Review (Bureau of Law in MEMR)	Step 4— External Review (Ministry of Law and Human Rights)	Step 5— Final Approval by the President (State Secretary)
New and Renewable Energy	➔				
Energy Demand and Supply	➔				

Information compiled from monitoring activities

The finalization of these draft regulations requires additional processes such as an internal review process at the Legal Unit within MEMR and an external review by the Ministry of Law and Human Rights.

➤ **Obstacles/challenges**

Workload issue:

1. At the moment, MEMR oversees many laws in the energy sector and is required to issue many regulations under each law (i.e. Electricity, Mineral, Mines) as it is amended, which is an evident burden on the Bureau of Law.

Prioritization issues:

1. Neither governmental regulation is included in MEMR's 100-day programme under the second Yudhoyono Administration. Actions/programmes stipulated in the 100-day programme are currently of the utmost priority to MEMR and the Bureau of Law.
2. The Bureau of Law in MEMR was not informed of the two governmental regulations covered as CCPL CY2009 policy actions.

Other issues:

1. No deadline has been imposed on each step of the finalization of regulations, nor has

any penalty been imposed on delays in the process.

Institutional circumstances were drastically changed by the issuance of Presidential Decree No. 24/2010 on 14 April, 2010 on the setting up of a new Directorate General for New and Renewable Energy under MEMR with a workforce of around 250 officers. Geothermal power and other renewable energy sources, including nuclear energy, will fall within the purview of the newly established DG. Utmost priority will be placed on the formulation of a Renewable Energy Master Plan that covers roadmap, commercialization process, and institutional development until 2025; the two government regulations are on hold at the moment. MEMR envisages this Master Plan to be published by the end of 2010. A reconsideration of the government regulations is likely to be made once detailed functions and institutional arrangements are set up.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

The progress of this policy action depends entirely on the progress of the institutional setup process of the new DG and the formulation of the Renewable Energy Master Plan. The following recommendations, however, remain valid for the drafting process of the government regulations:

- Increasing communication with the Ministry of Law and Human Rights for Prioritization (Bappenas).
- Prioritization among governmental regulations MEMR drafts (MEMR).
- Reinforcement of staffing in Bureau of Law to expedite the process (MEMR).
- Establishment of work plan and time schedule for finalization of drafting process (General).
- Setting of a deadline for each step of finalization of regulations (General).

(Note: More details have been provided in the 'Advisory Note'.)

➤ **Recommendations for beyond 2010**

While a final issuance of the Governmental regulations is anticipated, the various actions for promoting new and renewable energies need to be implemented and measures for the utilization and supply of energy need to be set. An appropriate incentive scheme should also be developed.

Anticipated outcome3:

[Short-term target (by 2009)]

- Energy intensity is reduced by 1% every year.

[Long-term target (by 2025)]

- Energy elasticity decrease to less than one by 2025.
- Energy intensity is reduced to 12-18 % by 2025.

Indication of CY2009 Action 5:

- Issue a Government Regulation on “Energy Conservation”

Background of Policy Action

Indonesia has a relatively higher GDP-energy elasticity than neighbouring Asian developing countries³⁰. This indicates potentially high GHG emissions along with economic growth. If no effective measures are taken towards energy conservation and efficiency improvement, energy consumption and its corresponding GHG emissions will keep increasing. In response, Indonesia has set both a short-term and a long-term intensity target of reducing intensity by 1% every year to achieve an energy intensity of below 1 by the end of 2025.

In CY2009, the Government Regulation on energy conservation was drafted and underwent a series of administrative processes such as stakeholder consultations, internal review within MEMR, and external review at the Ministry of Law and Human Rights. The regulation was then submitted to the State Secretary.

The target action and monitoring methodologies identified for CY2009 have been summarized in Table 1.2.7.

Table 1.2.7. Monitoring framework for CY2009 Action 5 in the Energy Sector

Implementation steps	Evaluation indicators	Verification measures
Final approval by the President at the State Secretary	Issued regulation of ‘Energy Conservation’	Collecting information from MEMR

30 As of 2010, Climate Analysis Indicator Tools (CAIT) Version 7.0

(i) **Analysis of progress/attainments**

➤ **Status**

Government Regulation on Energy Conservation No. 70/2009 was issued on 16 November, 2009 and the policy action was achieved.

Figure 1.2.3. Summary of Progress towards Issuance of Governmental Regulations

Government Regulation	Internal Process			External Process	
	Step 1—Drafting Regulation (MEMR)	Step 2— Stakeholder Consultation	Step 3— Internal Review (Bureau of Law in MEMR)	Step 4— External Review (Ministry of Law and Human Rights)	Step 5— Final Approval by the President (State Secretary)
Energy Conservation and Energy Efficiency					

Information compiled from monitoring activities

➤ **Obstacles/challenges**

The policy action has been achieved for CY2009. Issues remain, however, on the implementation aspect of the Regulation. At the moment, the MEMR considers the accreditation of energy managers required under Regulation No. 70/2009 through an independent body named HAKE (Association of Energy Conservation Experts). As a next step, HAKE needs to acquire legal status. This will be authorized by the Director General of DGEEU of MEMR.

(ii) **Recommendation**

➤ **Recommendations for ensuring impact**

The CY2009 action has been achieved.

➤ **Recommendations for beyond 2010**

Based on the issuance of the governmental regulation, the implementation of various measures for energy conservation and efficiency improvement must be completed. Appropriate incentive schemes and national capacity-building for energy conservation should also be developed.

To ensure the full implementation of the energy conservation measures stipulated by the Regulation, the establishment of a new institution has been proposed. This institution will oversee energy conservation, energy efficiency (including implementation of conservation measures), accreditation of certificates to qualified energy auditors/managers, etc., for better implementation.

Indication of CY2009 Action 6:

- Design a mid-term energy audit and efficiency program, including medium term targets, incentive mechanisms, and monitoring and evaluation framework.

Indication of CY2009 Action 7:

- Conduct energy audit for 40 firms.

Indication of CY2009 Action 8:

- Issue ministerial regulation for energy efficiency labelling system for CFL, TV and refrigerator.

The targets stipulated by the Presidential Decree on National Energy Policy 5/2006 include a medium-term national target of reducing energy intensity by 1% each year, and a long-term national target of reducing energy elasticity to below 1 by 2025. Following this, the promotion of demand-side management measures (energy audit programme and energy efficient labelling scheme) in the industrial sector has been selected as a CCPL policy action.

Energy Audit Programme

Indonesia started an energy audit under the Partnership Programme in 2003, under the PLN budget. The programme was suspended in 2005 and was restarted in 2006 under the APBN budget; it is still in operation. Table 1.2.8. presents an overview of the energy audit programme in Indonesia from 2003 to 2009.

Table 1.2.8. Summary of Partnership Programme, 2003–2009 (Energy Audit)

	2003	2004	2005	2006	2007	2008	2009
Budget	- (PLN)	- (PLN)	N/A	Rp. 2.4 billion (Government)	Rp. 25 billion (Government)	N/A	Rp. 4.4 billion (Government)
# of Participants	11 targets (5 industries, 6 buildings)	9 targets (3 industries, 6 buildings)	N/A	32 targets (21 industries, 11 buildings)	200 targets (138 industries, 62 buildings)	N/A	40 targets (16 industries, 24 buildings)
Energy Audit: Saving potential per year (GWh)	78.4 (Rp. 50.8 billion)	14.8 (Rp. 6.9 billion)	N/A	40.7 (Rp. 40.4 billion)	519 (Rp. 289 billion)	N/A	Ongoing
Monitoring: Saving accomplished per year (GWh)	34.4 (Rp. 22.2 billion)	14.1 (Rp. 8.2 billion)	N/A	30.1 (Rp. 19.9 billion)	To be conducted in 2009	N/A	Ongoing

Source: Interview with DGEEU in February 2010.

In CY2008, 44 energy audits (26 state-owned buildings and 18 industrial factories) were initially planned. No audits were conducted, however, owing to delayed budget allocation from the MOF.

To ensure continuity and integrity of the Partnership Programme, the policy actions in CY2009 focus on redesigning and reinforcing the overall structure of the audit and efficiency programme with a more long-term perspective. This is done in order to meet the short- and long-term goals for the industry and the domestic commercial sector.

Energy Efficiency Labelling Scheme

The energy efficiency labelling scheme is an effective demand-side management tool to induce market transformation in domestic household electrical appliances by replacing energy intensive products with energy efficient products. At the moment, the labelling scheme in Indonesia is in the initial stage of development.

Table 1.2.9. Implementation Schedule for Energy Efficiency Labelling

Year	Target Appliances for Implementation
2009	CFLs, Refrigerators, Televisions (TV)
2010	Air Conditioners (AC), Electric Fans
2011	Electric Motors, Rice Cookers
2012	Washing Machines, Ballasts
2013	Other electrical equipment/appliances

Source: Workshop on Study of Energy Conservation in Indonesia, February 2009.

Currently, Indonesia participates in the Energy Standards and Labels (ES&L) Program under the Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labelling (BRESL) projects, which is funded by UNDP-GEF. Indonesia participates in the programme with the intention of acquiring capacity-building and assistance to implement cost-effective energy standards and labels³¹.

To support the national effort to promote DSM measures, JICA initiated a study in February 2009 on promoting the implementation of DSM. The study will assess the current status of power demand and power supply and the potential of energy efficiency in accordance with the

³¹ Participating countries in ES&L Program under BRESL include Bangladesh, China, Indonesia, Pakistan, Thailand, and Vietnam. The program targets refrigerators, ACs, electric motors, ballasts for FTLs, electric fans, CFLs, and rice cookers (see GEF website for more details, <http://www.bresl.net/>).

Power Development Plan (RUPTL). The study will then propose a utility pricing system, piloting projects to implement EE appliances, an EE labelling system, and other financial mechanisms to promote overall EE through DSM. The study will generate its final report by December 2011.

The target action and monitoring methodologies identified for CY2009 have been summarized in Table 1.2.10.

Table 1.2.10. Monitoring framework for CY2009 Actions 6, 7, and 8 in the Energy sector

Implementation steps	Evaluation indicators	Verification measures
<p>Quantitatively analysing and exploring potential energy efficiency paths and their energy saving potentials (list of actions, including target number of audits) to meet medium-term energy intensity target</p> <p>Design medium-term targets based on quantitative analysis</p> <p>Identifying financial gaps in the implementation of specific actions and exploring potential incentive mechanisms to fill these gaps</p> <p>Securing human resources and expertise for monitoring and evaluating the implementation of actions</p> <p>Establishing evaluation criteria</p> <p>Making a format for monitoring and evaluation reports</p>	<p>Contents of mid-term target</p>	<p>Collecting information and reviewing energy efficiency paths with energy saving potential</p> <p>Collecting information and assessing the numerical rational behind potential medium-term targets</p> <p>Reviewing proposed incentive mechanisms</p> <p>Reviewing organizational structure for monitoring and evaluation</p> <p>Reviewing evaluation criteria</p> <p>Reviewing reporting format for monitoring and evaluation</p>
<p>Securing budget allocation to conduct the targeted number of energy audits</p> <p>Submitting a summary report of audit to Bappenas</p>	<p>Audit report for CY2009 activities</p>	<p>Reviewing budget allocation and expenditure for energy audit programme</p> <p>Collecting information on implementation status from MEMR</p> <p>Reviewing audit report submitted to Bappenas</p>
<p>Completing examination of the specifications of technical guidance for TVs and Refrigerators by appliance testing laboratory</p> <p>Drafting ministerial regulation for CFLs, TVs, and Refrigerators</p> <p>Completing stakeholder consultations</p> <p>Completing internal review process by the MEMR</p> <p>Final approval by the Minister of MEMR</p>	<p>Issued ministerial regulation for energy efficiency labelling system</p>	<p>Collecting information on progress of technical guidance both from appliance testing laboratory and from MEMR</p>

With regard to the implementation steps for the energy audit component, it has been suggested that only a summary report of the audit be submitted to Bappenas instead of the entire audit report.

(i) **Analysis of progress/attainments**

➤ **Status**

The policy action on the mid-term energy audit and efficiency program will be covered by the JICA study. The study aims to design the overall framework and business model for the energy audit and efficiency program, the financing options to support the implementation of this framework, and the display options for ESCOs business in Indonesia.

The study commenced in December 2009 after a slight delay in the tendering process. The first on-site survey was held in January 2010 and a second in March 2010. Findings will be presented after a workshop in May; the JICA study is scheduled to be completed in June 2010.

For the energy audit programme, energy auditing for 40 firms have been carried out this year in accordance with the policy action plan for CY2009. The procurement of consultants for implementation was completed in June 2009; the results of the audits were delivered in December 2009. At the moment, MEMR is preparing a summary report of the audit for CY2009. Table 1.2.11. shows a breakdown of the types of buildings that participated in the audit programme.

Table 1.2.11. Participants of Energy Audit Program for Year 2009

Buildings (24)	Government Offices	20
	Private Building/Commercial Office Building	1
	Hospital	1
	Hotel	2
Industries (16)	Food industry (Sugar Factory)	5
	Beverages industry (Air Mineral/Mineral Water)	1
	Manufacturing Industry (Lamps, Plywood, and Solar Home System)	3
	Textile industry	4
	Chemical Industry (Coal and NGL)	2
	Cement Industry	1
Total		40

Source: Interview with DGEEU in February 2010.

For policy action on the issuance of the ministerial regulation for energy efficiency labelling, MEMR has been preparing a technical guidance for the labelling system.

Technical guidance for CFL has been drafted and sent for internal review to the Bureau of Law in the Ministry. The draft has been sent back with comments for additional stakeholder consultation in January 2010. The revised draft will be sent back to the Bureau of Law to be finalized.

Technical guidance for TVs and Refrigerators is still in the process of formulating energy efficiency levels. Once this is done, the guidance will be combined with the existing national performance standard (SNI) as a guideline for each household appliance. This will be followed by stakeholder consultations and internal review by the Bureau of Law. This will then be issued as a Ministerial Regulation of MEMR. The process of formulating technical ministerial regulation on energy efficiency labelling is summarized in the following table.

Table 1.2.12. Summary of Steps for Formulating Ministerial Regulation for Energy Efficient Labelling

Responsible Ministry	MEMR	MOI	MEMR	MEMR	MEMR
Steps	1. Developing energy efficiency (EE) criteria for household appliances	2. Combining EE criteria into existing SNI for household appliances	3. Stakeholder consultation	4. Internal review by the Bureau of Law	5. Issuance of Ministerial Regulation with the signature of the minister

➤ **Obstacles/challenges**

A slight delay in JICA’s study on the mid-term audit and efficiency program was caused by the prolonged tendering process. However, it is expected to be completed as planned.

The biggest barrier in the energy efficiency program is the lack of financial support schemes for beneficiary companies. It is difficult to acquire necessary funding from either the government or the market (especially commercial banks) for the renovation or modernization of inefficient devices to more energy efficient ones. This was also pointed out at the Focus Group Discussion held during the A&M activities in January 2010. KfW has already established a revolving fund scheme through the Industrial Efficiency Pollution Control Programme. This scheme channels funds through domestic banks as loans to the industry and building sector for energy-efficiency-improvement-related investments (i.e. replacement of industrial chillers) and for ex-post monitoring and consulting services.

However, these investment options are not well known by the ministries, companies, and other potential beneficiaries in the country.

A subsidized electricity price also undermines the incentive for energy efficiency and energy conservation. Due to the lower cost of electricity and energy, the payback periods for energy efficiency and conservation-related investments are very long. This is a major hindrance in motivating companies to become more energy efficient.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

The following additional measures for various stakeholders are recommended to ensure and expedite the achievement of targets.

- Reinforcing division for energy efficiency and conservation and the labelling scheme (MEMR) by recruiting and securing number of qualified staffs with technical expertise, and conducting capacity building.
- Prioritization of regulations covered under CCPL (MEMR)
- Enhanced capacity-building (Donors)
- Expansion of staffing for setting energy efficiency criteria (Donors)

(Note: More details have been provided in the ‘Advisory Note’.)

➤ **Recommendations for beyond 2010**

Various energy efficiency and conservation activities in Indonesia will be further expedited by establishing a single-window data or information clearing house that gathers information on audit results, locations of certified auditors, and other efficiency- and conservation-related issues. The opportunity for establishing such a clearing house should be explored.

In the meantime, various investment options for companies, buildings, and industries should be developed to realize the energy efficiency measures that are recommended by the energy auditors.

The introduction and launch of Energy Service Companies (ESCOs) should be explored to bring expertise to improving energy efficiency and conservation activities and to reducing the upfront financial burden of the government and enterprises in implementing efficiency and conservation plans.

While Indonesia has a large energy-saving potential, the effectiveness of energy efficiency and conservation measures is also closely related to the price of energy. Energy efficiency and conservation measures should go hand-in-hand with a national energy subsidy programme.

➤ **Needs assessment for technical assistance/potential cooperation**

- In order to scale up financial options for domestic stakeholders for energy efficiency investment, the provision and/or piloting of an additional fund scheme that utilizes local banks, similar to that established by KfW, has been suggested.
- Provision of technical assistance for capacity development of ESCOs and energy auditors.
- Provision of capacity development for Indonesian energy managers system (EMS).

Indication of CY2009 Action 9:

- Issue a ministerial regulation on CO₂ roadmap

Indication of CY2009 Action 10:

- Design a CO₂ roadmap implementation program, including incentive mechanism

The roadmap for CO₂ emission reduction in major industrial sectors has been planned and drafted as a part of actions to achieve the medium-term national target of reducing energy intensity by 1% each year and reducing energy elasticity to below 1 by 2025. The Ministry of Industry (MOI) selected the steel and cement sectors from among the various major industrial sectors as primary targets for the 2008 roadmap. To realize the CO₂ reduction potential identified by the roadmap, the Ministry of Industry aims to issue a Ministerial Regulation for CO₂ reduction targets for each sector.

Preparation of CO₂ emission reduction roadmap

The draft CO₂ reduction roadmap was prepared by the Ministry of Industry in CY2008. This was followed by the revised draft in November 2008, which made references to the findings of the Technology Needs Assessment. Although the stakeholder consultations on setting CO₂ reductions went fairly smoothly in the cement industry, the steel sector faced some delay in the process. This was partly due to the difficulty faced by the Ministry of Industry in benchmark-setting for sectoral CO₂ reduction targets. In the meantime, a careful assessment of the contents of the draft roadmap revealed room for improvement in the overall design of the roadmap itself.

Drafting a Ministerial Regulation on CO₂ reduction

While the date of issuance of the Ministerial Regulation on the CO₂ reduction roadmap depends on the finalization of the roadmap, the Ministry of Industry has decided to issue the roadmap as an 'open' regulation. This improves flexibility in amending the contents (i.e. years of implementing specific energy efficient technology).

The target action and monitoring methodologies identified for CY2009 are summarized in Table 1.2.13.

Table 1.2.13. Monitoring framework for CY2009 Actions 9 and 10 in the Energy sector

Implementation steps	Evaluation indicators	Verification measures
<p>Designing an implementation schedule by prioritizing specific technologies to be implemented for each sector</p> <p>Identifying financial gaps in implementing specific technology and exploring potential incentive mechanisms to fill these gaps</p> <p>Securing human resources and expertise for monitoring and evaluating the implementation of technologies</p> <p>Establishing evaluation criteria</p> <p>Making a format for monitoring and evaluation reports</p>	<p>Contents of implementation program</p>	<p>Reviewing implementation schedule</p> <p>Reviewing proposed incentive mechanisms</p> <p>Reviewing organizational structure for monitoring and evaluation</p> <p>Reviewing evaluation criteria</p> <p>Reviewing reporting format for monitoring and evaluation</p>

(i) Analysis of progress/attainments

➤ **Status**

In the cement sector, the ministerial regulation for the CO₂ roadmap is expected to be finalized by July 2010 and will reflect the results of the studies conducted by METI Japan and AFD.

The CO₂ roadmap for the steel sector is still under preparation due to the larger number of stakeholders involved in the consultations process (more than 80 enterprises in the steel sector, as against 9 in the cement sector). It is also more difficult to reach an agreement over selecting a particular technology (from among the several technologies used in the industry) as a national standard. At the moment, the MOI aims to finalize the CO₂ roadmap and issue the Ministerial Regulation for the steel sector by the end of 2010.

Both METI Japan and AFD have provided technical assistance in the designing of a CO₂ roadmap implementation program by re-examining and improving the existing roadmap through studies.

The METI Japan study is aimed at supporting the implementation of the sectoral approach in Indonesia; it focuses on brushing up the contents of the CO₂ reduction roadmap by reviewing effective technology options for energy conservation. The study also looks at various options of implementation of these technologies and analyses the impacts of CO₂

mitigation activities on both cement and steel sectors. A workshop was conducted in mid-March 2010 and a draft final report with a revised version of the CO₂ roadmap has been submitted to the MOI.

The AFD study focuses on the cement sector. It includes an institutional analysis, an identification of currently available technologies and energy efficient technologies, an estimation of CO₂ mitigation potential based on the WBSCD method, and a drafting of the regulation for the defined target. After the first stage of the study was completed in August 2009, the second stage was launched to include target-setting for CO₂ reduction in the cement sector. It is scheduled to be completed in six months.

➤ **Obstacles/challenges**

Steel Sector: Time-consuming process for reaching consensus. There is difficulty in reaching a consensus on the selection of a particular technology to be benchmarked as the national standard. Due to the large number of stakeholders, it is also difficult to reach a consensus on the sectoral CO₂ reduction target.

From the viewpoint of implementation, appropriate financial support schemes may be required to help both the steel and the cement sectors follow the CO₂ roadmap and overcome the initial cost barriers of introducing energy efficient technologies.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

To expedite and ensure that the CY2009 targets are reached, the following additional measures have been suggested:

- Institutional and technical capacity-building for MOI policymakers and officials in charge of stakeholder consultations (Donors).
- Setting up of a national benchmark for performance, including emission intensity and specific energy consumption of industry sector (Donor and MOI).
- Establishment of and resource allocation for the benchmarking committee comprising government representatives, representatives from the industry sector, and external sectoral experts to discuss and determine benchmarks.
- Utilization of international cooperation scheme to absorb good practices of other countries and to enhance technology transfer.

(Note: More details have been provided in the 'Advisory Note'.)

➤ **Recommendations for beyond 2010**

Once the CO₂ roadmaps for both sectors are finalized, the next step will be the implementation of sectoral CO₂ reduction measures in accordance with the roadmap. Investment for these measures should be ensured through financial assistance schemes. The swift adoption of the revised CO₂ roadmaps for both steel and cement sectors, based on the two studies, is highly recommended, as is their feeding into the consultation process and transitioning to the implementation stage.

➤ **Needs assessment for technical assistance/potential cooperation**

- Development of a financial supporting body by industries for implementing CO₂ reduction measures.
- Conducting studies on other subsectors to develop the CO₂ reduction roadmap.

Anticipated outcome 4:

- Access to energy, including electricity, is enhanced by using renewable energy in rural villages.

Indication of CY2009 Action 11:

- **Implement Energy Self Sufficient Village Program among various line ministries under coordinated monitoring framework**

The Energy Self Sufficient Village (DME) Program was initiated in February 2007 as a comprehensive social programme to alleviate poverty in villages by utilizing locally-available renewable energy as an entry point for rural economic development. The programme is also intended to help increase productivity and improve employment opportunities and social welfare. Other dimensions of the programme are the development of applicable technologies, the building of institutional capacity, and the achievement of empowerment through community participation.

Sources of renewable energy for the DME Program are divided into two categories: Biofuel-based (jatropha, palm, and sugarcane) and non-biofuel based (microhydro, solar, wind, biogas, and biomass). The DME Program is part of the overall Poverty Reduction Programme (PNPM) under the Ministry of Social Welfare. It has been implemented in coordination with the Coordinating Ministry of the Economy (EKUIN), related ministries—the MOA, Ministry of Home Affairs, MEMR, and MOI—and local governments. The programme is funded through multiple sources, such as state budget (PNPM), local governmental budget, and state-owned and private enterprises.

In the meantime, the strategic plan of the DME Program³² aims to cover 3000 villages by 2015. It is expected to contribute to various governmental targets, such as the electrification target (95% village electrification by 2010, 100% electrification ratio by 2025) and energy diversification (5% of renewable energy of primary energy demand by 2025).

32 RENSTRA Strategic Plan 2010–2014: Program of Village with Energy Independence, 2008.

**Table 1.2.14. Coverage and Focus on DME Program based on Strategic Plan
(RENSTRA, 2007–2014)**

Year	2007	2008	2009	2010	2011	2012	2013	2014
Amount Established Energy Self Reliance Village	230	270	350	350	300	500	500	500
Cumulative	230	500	633	1,200	1,500	2,000	2,500	3,000
Focus of Activity	Consolidation of DME Concept	Pilot Location	Evaluation of Pilot Location	Replication	Replication	Replication	Replication	Evaluation of Replication and Overall
Initiator	Central Government	Central Government	Central Government and Regional Government	Regional Government	Regional Government	Regional Government	Regional Government	Regional Government

Source: RENSTRA Strategic Plan 2009–2014. Program of Village with Energy Independence. November 2008.

With regard to progress in CY2008, a presidential instruction (No. 5/2008) on Economic Programme Focus for 2008–2009 was issued by EKUIN on 22 May, 2008. This instruction included target actions and expected output as well as APBN allocation for electricity access expansion to rural areas for CY2009. The Strategic Plan (RENSTRA) has also been drafted. With regard to implementation, 340 villages were covered under the DME Program in CY2008.

Target action and monitoring methodologies identified for CY2009 are summarized in Table 1.2.15.

Table 1.2.15. Monitoring framework for CY2009 Action 11 in the Energy sector

Implementation steps	Evaluation indicators	Verification measures
<p>Securing enough budget, human resources, and means for technology transfer to implement targeted number of villages for CY2009</p> <p>Evaluate previous pilot activities and publish evaluation reports in accordance with RENSTRA</p> <p>Identify best practices and lessons learned from previous pilot activities for replication</p>	<p>Progress of implementation in targeted number of villages for CY2009</p>	<p>Reviewing budget allocation for ESSV Program for CY2009</p> <p>Reviewing evaluation report on previous pilot activities (if published within CY2009)</p> <p>Collecting information on implementation status from EKUIN, MEMR, and GTZ (and local governments, if possible)</p> <p>Documents to review: Evaluation report for pilot activities Report on stakeholder consultation meetings (if possible) Other project-related documents</p>

(i) **Analysis of progress/attainments**

➤ **Status**

By the end of CY2009, a total of 633 villages across the country were covered under the rural electrification programme. Of this, around 50% are expected to fulfil the DME criteria. In CY2009, 208 villages were covered.

Since the single-year budgeting system for the DME Program was a bottleneck that delayed or prolonged projects, the Ministry of Finance agreed to apply a multi-year budgeting system; the new system will be introduced from CY2010³³.

The Assessment of Energy Self-Sufficient Village Program in Selected Locations was issued by GTZ in September 2009, as was a complete summary report.

➤ **Obstacles/challenges**

The following barriers have been identified for the DME Program.

Financial barriers

- The current budget allocation is limited to the provision and installation of hardware that includes power generation facilities and related devices; operation and maintenance costs are not included.

Institutional barriers

- Different renewable rural electrification programmes implemented by different line ministries have caused quality differences in DME, unclear boundaries, and modes of collaboration with existing programmes.
- Insufficient community participation in the planning stage of the DME. Lack of follow-up actions such as assessment of contribution of improved access to renewable energy to overall community development and poverty alleviation.

Barriers to policy actions

- Difficulty over assessing contribution of existing qualitative policy action to numerical governmental targets such as electrification ratio. Target setting: Existing target of strategic plan remains qualitative (number of villages to be covered by DME).

33 DME allocation in APBN is around RDP 75 billion for CY2010.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

While the CY2009 policy action has been achieved, the discrepancy between the number of villages identified in RENSTRA and the actual number needs to be addressed.

➤ **Recommendations for beyond 2010**

1. It may be necessary to re-design and develop overall support programmes for the DME to link the utilization of locally-available renewable energies for rural electrification with the utilization of renewable-based electricity for enhancing local economic activities. Further strengthening and scaling-up of capacity development and community participation programmes from the planning stage is required in order to cultivate ownership of these programmes. The development of a DME operation manual as well as frequent capacity-building workshops for officials in charge of DME implementation might be useful among line ministries and local governments.
2. Development of long-term support framework to help communities operate and maintain (O&M) the newly installed RE-based power generation facilities. Monitoring and follow-up schemes to regularly check the status of O&M of the facilities and the utilization of income for community development. The smooth implementation of the Project for Strengthening Local Government's Capacity for Climate Change will facilitate this.
3. Development of technical assistance scheme to assist growth of local industries (i.e. microhydro power turbine manufacturers) to enhance the sustainability of the programme.
4. Conduct comprehensive mid-term evaluation of the programme that includes a numerical assessment of the contribution to governmental targets (i.e. annual power generation for mitigation and community income from power generation and per capita GDP of community for poverty alleviation). Additionally, develop a quantitative target for the strategic plan of the DME Program.
5. Develop a comprehensive national database of DME that lists villages by year of implementation, types of renewable energy source utilized, technical specification of facilities, annual potential energy savings, size of village, major economic activities within village and commercial products, status of income generation from DME Program, and how the village community utilizes this income. The development of this database should be followed up by national dissemination and awareness activities.

➤ **Needs assessment for technical assistance/potential cooperation**

- Conduct study on designing master plan to enhance the sustainability of the DME Program.
- Provide technical assistance for the growth of local industries.
- Menko Ekuin expressed the need for potential mapping of both national and regional DME villages to attract investment to further develop DME. These needs should also be put on the agenda of the donor community, along with the need for an overall renewable energy resources mapping of Indonesia.

2. Adaptation

2.1. Water Resources Sector

2.1.1. Summary of Water Resources sector

<Outline of Outcome and Indication of CY2009 Actions>

There are four specific actions related to legal and institutional reforms in the water resources management sector, as stated in the ICCPL CY2009 Policy Matrix. The anticipated outcome of these policy actions is to improve water resources management in an integrated manner in order to strengthen resilience to increasing drought and flood risks, specifically in nationally strategic river basins on Java Island.

**Table 2.1.1. Progress in the Water Resource sector
in CY2009 and recommendations**

Anticipated outcome 1:			
- Improving water resource management in integrated manner to strengthen the resilience to the increasing drought and flood risks, specifically in nationally strategic river basins in Java Island.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Establish a coordinated entity on water resource management (National Water Resources Council)	Exceedingly attained	- No follow-up required.
2	Issue a Presidential Decree for council members nomination to operationalise National Water Resource Council	Exceedingly attained	- No follow-up required.
3	Finalize integrated water resource management plans (POLA) in national strategic river basin in Java under the coordination of related river basins water resources council	Attained	- Issue Ministerial Decree for POLA that has already been finalized. - Expedite preparation of POLA by utilizing consultants and/or NGOs.
4	Strengthen river basin management offices, Balai and Balai Besar	Attained	- Establish basin water resource council in all Balai and Balai Besars. - Continue recruiting more staff with water resources policy background. - Request donor agencies to provide technical assistance for capacity-building of existing staff.

2.1.2. Background of the policy actions/targets

(i) Overall Situation

The Ministry of the Environment, Republic of Indonesia (KLH) prepared the ‘National Action Plan Addressing the Climate Change in Indonesia’ in 2007. The National Action Plan to address climate change was formulated as guidance for various institutions in carrying out a coordinated and integrated effort to tackle climate change. The time frame for the National Action Plan is: 1) Immediate action (2007–2009); 2) short-term action (2009–2012); 3) medium-term action (2012–2025), and 4) long-term action (2025–2050).

In the National Action Plan, an agenda of national development with adaptation towards climate change has been proposed to achieve development patterns that are resilient to the impacts of current and future climate change. The climate change adaptation agenda has focused on areas vulnerable to climate change, namely: Water resources; agriculture, fisheries, coastal and marine, infrastructure and settlement, and health and forestry.

(ii) Priority Issues

Recognizing the critical condition of water resources in Indonesia, on Global Water Day XII in 2004, the Government of Indonesia emphasized the importance of water resources management by signing the ‘National Declaration on Effective Water Management in addressing Disaster’. This was signed by eleven ministries under the coordination of the Coordinator Ministry of People Welfare. The President then announced on 28 April, 2005 a National Partnership Movement to save Water (GNKPA), covering six strategic components. These components are: 1) Spatial Planning, physical development, land and population; 2) forest and land rehabilitation along with water conservation; 3) control of damaging by water; 4) management of water quality and water pollution control; 5) consumption saving and management of water demand; and 6) utilization of water resources in a fair, efficient, and sustainable way.

The National Action Plan towards climate change considers both mitigation and adaptation approaches to be priority in the water resources sector.

Mitigation: Improve water management in peatland areas, particularly where peatlands deliver key ecosystem services.

Adaptation: The adaptation agenda of the water sector has focused the Indonesian water vision through the ‘actualization of stable water utilization in an efficient, effective, and sustainable

manner for the prosperity of all the people'. Priority issues in adaptation in the water resource sector are as below:

1. Develop and implement climate-proof watershed and water basin management.
2. Increase climate change resilience for water infrastructure.
3. Develop and improve flood management.

Future framework

Reforming institutions and regulations at the national level in response to climate change usually takes a long time; the impacts of climate change, however, can occur in the shorter time span and affect the local people. Therefore, the GOI should focus on creating and strengthening institutions at the local level in the short term. Similarly, the impact of climate change on the water resource sector is usually the result of interaction between multiple sectors such as agriculture, forestry, etc. Therefore, the Ministry of Public Works should cooperate and coordinate with other ministries such as the Ministry of Forestry, the Ministry of Agriculture, and the Ministry of Environment to develop integrated policies and plans for adaptation.

Institutional and regulatory adaptation reforms in Indonesia against climate change in the water resources sector are progressing well. Therefore, the GOI should now focus more on establishing hydro-meteorological and hydro-geological monitoring stations and on creating a longer-term database for climate change impact assessment and vulnerability assessment in the water sector at the local level. To cope with these impacts, the GOI should expedite the finalization of 'Adaptation Guidance for Local Governments'. The Ministry of Public Works should simultaneously coordinate with Bappenas to mainstream funds for adaptation in the water resources sector, under the Indonesia Climate Change Trust Fund (ICCTF).

(iii) JICA's and other donors' existing/potential cooperation

Existing Cooperation

JICA provided the Climate Change Program Loan to the Government of Indonesia in September 2008 for policy reform in various sectors in response to climate change in Indonesia. Under the adaptation category, several reforms are expected in the river management sector, such as legal and regulatory reforms and institutional and organizational strengthening reforms.

In addition to the Climate Change Program Loan, JICA signed an agreement (31 March, 2009) with the Republic of Indonesia to provide Japanese ODA loans of up to 71.245 billion yen for a total of five projects. Some of these Japanese ODA loans are being provided to enhance Indonesia's flood prevention capabilities and water source management in key regional cities

that have been damaged by frequent floods. Urban Flood Control System Improvement in Selected Cities will be provided to support improvements in river and flood control infrastructure and to bolster the capacity of river basin management offices to include measures for climate change adaptation. In addition, support will be given to the Countermeasure for Sediment in Wonogiri Multipurpose Dam Reservoir (I) Project to ensure regional water sources by applying anti-sedimentation measures to the Wonogiri Multipurpose Dam in central Java's upper Solo River Basin.

Other than JICA, many donor agencies support in the water resource sector of the GOI. On 21 August, 2009, the Asian Development Bank (ADB) signed a letter of intent with K-Water for a technical partnership to assist in the development of a decision support system for Integrated Water Resources Management (IWRM) in Citarum River Basin. The technical assistance is mainly for institutional strengthening of IWRM in the 6 Ci's River Basin Territory (which comprises three river basin organizations: Balai Besar Citarum, Balai Besar Ciliwung-Cisadane, and Balai Besar Cidanau-Ciujung-Cidurian). The TA activities cover three broad areas: 1) Institutional strengthening for the implementation of an IWRM roadmap; 2) institutional strengthening for IWRM across the entire 6 Ci's region; and 3) activities related specifically to the implementation of the ADB-supported Integrated Citarum Water Resources Management Investment Program (ICWRMIP). The total estimated budget is about USD 6 million for a total period of 48 months.

From June 2007, GTZ, in partnership with the Ministry of Public Works (PU), the National Planning Agency (Bappenas), and the Ministry of Home Affairs, started a project on 'Climate Change Adaptation Strategy and Action Plan for the Water Sector in Indonesia'. The project aims to enhance the capacity of policymakers to mainstream climate change issues into development planning.

With funding from the Global Environment Facility (GEF), UNDP is assisting the Government of Indonesia (GOI) to prepare its Second National Communication (SNC) on progress towards compliance with the UN Framework Convention on Climate Change (UNFCCC), which it ratified in 1994. Some of the components of this project are: Supporting project development in mitigating the effects of climate change; promoting strategies for adapting to climate change; and disseminating climate change awareness-raising materials.

CSIRO (Commonwealth Scientific and Industrial Research Organization), with funding support from AusAID, is launching a project (until 2014) on 'Analysing Pathways to Sustainability in Indonesia (Pathways), Climate Change Perspective'. CSIRO is partnering with Bappenas, BAPPEDA, and the World Bank on this project. The 'Pathways' project will contribute to

Bappenas' efforts to conduct policy analysis, coordinate approaches among sectoral ministries, and develop longer term national plans and strategies on climate change mitigation and adaptation and energy/carbon intensity.

Table 2.1.2. Assistance Supported by Donors in the Water Resource Sector

Donors	Program/Projects
JICA	<ul style="list-style-type: none"> ➤ Medan flood control project ➤ Batanghari Irrigation Project II ➤ Project type sector loan for Water Resource II ➤ Decentralization irrigation system improvement project in eastern region of Indonesia
IBRD	<ul style="list-style-type: none"> ➤ Water Resource and Irrigation Sector MGT program ➤ Dam Operation Improvement and Safety Project (DOISP)
ADB	<ul style="list-style-type: none"> ➤ Participatory Irrigation sector Project ➤ Participatory Irrigation sector Project (SF) ➤ Integrated Citarum Water Resource Management Investment Program (ICWRMP) ➤ Integrated Citarum Water Resource Management Investment Program (ICWRMP) (SF)
GTZ	<ul style="list-style-type: none"> ➤ Climate Change Adaptation Strategy and Action Plan for the Water Sector in Indonesia

JICA's Potential cooperation

Based on consultation with relevant stakeholders (ministries, donor agencies, etc.) in the water resources management sector in Indonesia, GOJ and JICA can further cooperate to design technical assistance or grants in the following areas: 1) Rainfall and flood early warning systems; 2) reservoir management based on weather forecasting; 3) drought management based on satellite imagery; 4) increased capacity in the field of hydro-climatology; 5) increased capacity in the efficiency of water consumption; 6) support for preparation of POLA and master plans in other basins where the ADB and the WB do not provide TA and grants; 7) establishment of hydro-meteorological and hydro-geological monitoring stations in selected basins; and 8) preparation of a climate change vulnerability map, technical assistance for which has already been requested from JICA by the Meteorology, Climatology, and Geophysics Agency (BMKG).

2.1.3. Analysis of progress and recommendations

Anticipated outcome1:

- **Improving water resource management in integrated manner to strengthen the resilience to the increasing drought and flood risks, specifically in nationally strategic river basins in Java Island.**

Indication of CY2009 Action 1:

- **Establish a coordinated entity on water resource management (National Water Resources Council)**

The National Water Resource Council (NWRC) is the apex body at the national level. The functions of the NWRC are: 1) Preparing and formulating national policy and strategy on water resources management; 2) deciding and providing options for classification of groundwater basins and river areas; 3) monitoring and evaluating hydro-geology and hydro-meteorology of groundwater basin and river area; and 4) preparing and formulating hydro-geological, hydro-meteorological, and hydrological information system management policies in consultation with the related institutions.

NWRC has been established and has started functioning as stipulated in Law No. 7 2004. Its first plenary meeting was held in July 2009 and its second on 14 April, 2010. Related issues on national water resource policy were discussed at second plenary meeting. NWRC has already finished some of its important tasks such as the formation of three special ad-hoc committees, the finalization of the draft of national water resource policy, the finalization of the proposal of groundwater zoning, and so on. The members of the three special ad-hoc committees are listed in Table 2.1.3. Moreover, out of the 33, 15 provincial water resource councils have been established and 18 are under preparation. Eight water resource coordination teams (TKPSDA) have been established in the National Strategic River Basin, and six TKPSDA have been established in Cross-provincial River Basins; These TKPSDA are considered to be coordinating entities in each river basin district. A summary of the regulations and decrees related to the water resource councils is shown in Table 2.1.4.

**Table 2.1.3. List of members of the three (3) special committees under NWRC
(Source: National Water Resource Council, Kep15/M.Ekon/08/2009)**

A. The ad-hoc committee of the National Water Resource Council for formulating policy documents consists of	
Chairman	The Director General of Land Management and Water, Dept of Agriculture
Secretary	Deputy Assistant of Water Resources Infrastructure, Coordinator Ministry for the Economy
Members	<ol style="list-style-type: none"> 1. The Director General of Regional Development, Home Affairs Dept 2. The Environmental Transportation Official, Dept of Transportation 3. The Official of Public Policy, Dept of Marine and Fishery 4. Director of Planning and Programming, Directorate General of Water Resources, Dept of Public Works 5. The Director for Water and Tobacco Industry, Directorate General of Agro-industry and Chemical, Dept of National Education 6. Director of Research and Community Services, Directorate of Education, Dept of National Education 7. The Director of River Basin Management, Directorate General of Land Rehabilitation and Forestry, Dept of Forestry 8. The Deputy Assistant of Science and Technology Analysis, State Ministry of Research and Technology 9. The Deputy Assistant of River and Lake Pollution Control, State Ministry of the Environment 10. Head of Environmental and Geology Agency, Dept of Energy and Mineral Resources 11. Head of Sub-directorate of Health and Water, Directorate of Health Environmental; the Director General of Disease Prevention and Health Environmental, Dept of Health 12. Head of Sub-directorate of Conservation and Forestry Development Services, Bappenas 13. Head of Meteorology, Climatology and Geophysics Agency 14. Mr. Peter Hehanusa, Indonesia Science Institute 15. Mr. Hasyim, PSDA Watch 16. Mr. Sudar Dwi Atmono, The Institute for Social and Economic Research, Education and Information (LP3ES) 17. Mr. Achmadi Partowijoto, Indonesian Water Partnership (KAI) 18. Mr. Rapiali Zainuddin, Public Water Concern (MPA) 19. Mr. S. Indro Tjahyono, Secretariat for Forest Conservation in Indonesia (SKEPHI) 20. Mr. Bambang Widyanoro, Association of Indonesian Forest Concessionaires (APHI) 21. Mr. Priyo Pribadi Soemarno, Indonesian Mining Association (IMA) 22. Mr. Hendro Baroeno, Indonesian Bottled Drinking Water Companies Association (ASPADIN) 23. Mr. Arief Toengkagie, Rinjani Trek Management Board (RTMB) 24. Mr. Eddy Eko Susilo, Indonesia Groundwater Drilling Association (APPATINDO) 25. Ms. Karen Sjarief Tambayong, The Indonesian Flower Association 26. Mr. Bambang Kuswidodo, Indonesian Committee on Large Dams (KNI-BB) 27. Mr. H. Achmad Marju Kodri, Indonesia Drinking Water Association (PERPAMSI) 28. Mr. H. Winarno Tohir, The Progressive Fisherman and Farmer's Association (KTNA) 29. Mr. Rubiyanto, Adhi Eka Water Association (YAAE) 30. Mr. Kusnaeni, Water Resources Management Information and Communication System (JIK-PA) 31. Ms. Uily Harry Rusady, Garuda Nusantara Association

B. The ad-hoc committee to consider stipulating river basin, groundwater cavity, and river basin forum consists of	
Chairman	The Director of Water Resources Management, Directorate General of Water Resources, Dept of Public Works
Secretary	Mr. Sudar Dwi Atmanto, The Institute for Social and Economic Research, Education and Information (LP3ES)
Members	<ol style="list-style-type: none"> 1. The Environmental Transportation Official, Dept of Transportation 2. Directorate of Land and Water Management, Dept of Agriculture 3. The Director of Coastal and Ocean, Dept of Marine and Fishery 4. Director of Land and Forest Rehabilitation Program, Directorate General of Land Rehabilitation and Social Forestry, Dept of Forestry 5. Head of Environmental and Geology Agency, Dept of Energy and Mineral Resources 6. Head of Isotopes Technology and Radiation Application, National Atomic Agency 7. Head of Conservation and Water Pollution Control, Coordination Ministry for Economy 8. Head of Sub-directorate of Conservation and Environmental Forest Development Services, Bappenas 9. 10. Head of Sub-directorate of Natural Resources Planning and Controlling, Directorate FPR-LH, Directorate General of Regional Development Program, Dept of Home Affairs 11. Head of River Section, State Ministry for the Environment 12. Mr. Robert Delinon, Indonesia Science Institute 13. Mr. Achmadi Partowijoto, Indonesian Water Partnership (KAI) 14. Mr. Rapiali Zainuddin, Community Water Concern (MPA) 15. Mr. S. Indro Tjahyono, Secretariat for Forest Conservation in Indonesia (SKEPHI) 16. Mr. Arief Toengkagie, Rinjani Trek Management Board (RTMB) 17. Mr. Bambang Widyanoro, Association of Indonesian Forest Concessionaires (APHI) 18. Mr. Eddy Eko Susilo, Indonesia Groundwater Drilling Association (APPATINDO) 19. Mr. Christian P. P. Purba, TELAPAK 20. Mr. Bambang Kuswidodo, Indonesian Committee on Large Dams (KNI-BB) 21. Mr. Rubiyanto, Adhi Eka Water Association (YAAE) 22. Mr. Tafakhur Rozak Soedjo, PSDA WATCH 23. Mr. Kusnaeni, Water Resources Management Information and Communication System (JIK-PA) 24. Mr. H. Winarno Tohir, The Progressive Fisherman and Farmer's Association (KTNA) 25. Ms. Uly Harry Rusady, Garuda Nuantara Association

C. The ad-hoc committee to formulate policy documents on hydrology information system management consists of	
Chairman	Head of Environmental and Geology agency, Dept of Energy and Mineral Resources
Secretary	Head of Section for Database Management, the Meteorology, Climatology and Geophysics Agency
Members	<ol style="list-style-type: none"> 1. Director of River, Lake and Reservoir, Directorate General of Water Resources, Dept of Public Works 2. Directorate of Land and Water Management, Dept of Agriculture 3. Director of Spatial Plan for Ocean, Coastal and Small Islands, Dept of Marine and Fishery 4. Secretary of High Education Council, Directorate General of Education, Dept of National Education 5. Head of Section for Disaster Mitigation, Research and Technology Implementation Agency 6. Head of Section for Water Resources Conservation, Coordinator Minister for Economy 7. Head of Swamp and Estuary Section, State Ministry for the Environment 8. Ms. Nur Hygiawati Rahayu, Bappenas 9. Mr. Fakhruddin, Indonesia Science Institute 10. Mr. Rapiali Zainuddin, Community Water Concern (MPA) 11. Mr. Hendro Baroeno, Indonesian Bottled Drinking Water Companies Association (ASPADIN) 12. Mr. Bambang Kuswidodo, Indonesian Committee on Large Dams (KNI-BB) 13. Ms. Tri Mumpuni, Indonesia Community of Empowerment

Table 2.1.4. Regulations and decrees related to the water resource councils

Title	Authority	Completion	Progress
National Water Resource Council	National Water Resource (NWRC)	Completed	Pres. Reg No. 12/2008
Members of National Water Resource Council	National Water Resource (NWRC)	Completed	Pres. Decree No. 6/2009
Stipulating river basin (WS)	Dept. of PU	December 2009	Dept of PU still investigate the Ministry Regulation No. 11A/2006
Stipulating groundwater zoning (CAT)	Dept. of Coordinator Ministry for the Economy (ESDM *)	December 2009	Dept. of ESDM has submitted the proposal
National Water Resources Policy	National WR council	Was discussed at the 2 nd Plenary Meeting of NWRC on 14 April, 2010	
Policy of H3 information system management	National Water Resource Council	December 2009	Under discussion of team

(i) **Analysis of progress/attainments**

**Table 2.1.5. Monitoring framework for CY2009 Action 1
in the Water Resource sector**

Implementation steps	Evaluation indicators	Verification measures
Drafting regulation of National Water Resource Council (NWRC) Endorsement of regulation of NWRC by ministerial decree Formulate coordination guidance of programmes related to water conservation Examine POLA submitted by all Balai and Balai Besars and approve them if they are satisfactory or provide comments and suggestions for improvement	Regulation of National Water Resource Council Membership status of National Water Council (Government = 22 and Non-Government = 22) Minutes/reports of each meeting of National Water Resource Council (Meetings may be General Assembly Meeting and Assembly Special Meeting)	Collecting information from the secretariat of National Water Resource Council (i.e. from the PU) Documents to review: <ul style="list-style-type: none">• Regulation of National Water Resource Council• Membership status• Minutes of meetings

➤ **Status**

Completed.

➤ **Obstacles/challenges**

Not applicable.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Completed.

➤ **Recommendations for beyond 2010**

- Issuance of ministerial decree in national water resource policy after discussion in second plenary meeting of NWRC
- Finalize the proposal on river basin districts

Indication of CY2009 Action 2:

- **Issue a Presidential Decree for council members' nomination to operationalise National Water Resource Council**

Presidential Decree (No. 6/2009) for council members' nomination to NWRC has been issued. There are 44 members in the council, of which 50% are from government organizations and 50% are from non-government organizations.

The chairman of the NWRC is from the Ministry of Finance and the deputy chairman is from the PU. The PU also serves as secretariat of NWRC.

Table 2.1.6. National Water Resource Council (NWRC) members

Governmental Organization	Non-governmental Organizations
1. Coordinator Minister for Economic Affairs	1. Secretariat for Forest Conservation in Indonesia (SKEPHI)
2. Minister/Head of Body of National Development Planning	2. Indonesia Mining Association (IMA)
3. Minister Responsible for Water Resources	3. The Progressive Fisherman and Farmer's Association (KTNA)
4. Minister of Domestic Affairs	4. Indonesian Committee on Large Dams (KNI-BB)
5. Minister of for Environment	5. The Institute for Social and Economic Research, Education and Information (LP3ES)
6. Minister of Agriculture	6. Community Concerned about Water (MPA)
7. Minister of Health	7. Natural Resources Management (PSDA) Watch
8. Minister of Forestry	8. Association of Indonesian Forest Concessionaires (APHI)
9. Minister of Transportation	9. Water Resources Management Communication Information Network (JIK-PA)
10. Minister of Industry	10. Indonesian Flower Association (ASBINDO)
11. Minister of Energy and Mineral Resources	11. Adhi Eka Water Foundation
12. Minister of Marine and Fishery	12. TALAPAK
13. Minister of Research and Technology	13. Rinjani Track Management Board (RTMB)
14. Minister of National Education	14. Indonesian Farmer Association (HKTI)
15. Minister of Meteorology and Geophysics	15. Indonesian Renewable Energy Community (METI)
16. Head of Science Institution and six governors	16. Garuda Nusantara Foundation
	17. Indonesian Rubber Company Association (GAPKINDO)
	18. Indonesian Bottled Drinking Water Companies Association (ASPADIN)
	19. Drinking Water Association throughout Indonesia (PERPAMSI)
	20. Indonesian Ground Water Drilling Company Association (APPATINDO)
	21. Indonesian Water Partnership (KAI)
	22. River, Lake and Cross Transportation Businessman Association (GAPASDAP)

(i) **Analysis of progress/attainments**

**Table 2.1.7. Monitoring framework of CY2009 Action 2
in the Water Resource sector**

Implementation steps	Evaluation indicators	Verification measures
Finalize Presidential Decree for Nomination of NWRC Members Coordinate with Presidential Office for issuing finalized presidential decree	Finalized Presidential Decree for Nomination of National Water Resource Council members List of members of National Water Resource Council	Collecting information from the secretariat of National Water Resource Council (i.e. from the PU) Documents to review: <ul style="list-style-type: none">• Presidential Decree for Nomination of Members of National Water Resource Council

➤ **Status**

Completed.

➤ **Obstacles/challenges**

Not applicable.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Completed.

➤ **Recommendations for beyond 2010**

Not applicable.

Indication of CY2009 Action 3:

- **Finalize integrated water resource management plans (POLA) in national strategic river basin in Java under the coordination of related river basins water resources council**

The Integrated Water Resources Management Patterns and Plans (POLA) are the basis for policies and strategies on river basin management. The preparation and finalization of POLA in national strategic river basins on Java Island continues with substantial progress.

Each Balai and Balai Besar is responsible for preparing a POLA. The POLA has to be presented in a series of meetings before it can be finalized by ministerial decree. As of June 2010, 65 POLA had been prepared, 35 POLA presented to the special committee, 10 POLA approved by Governor/Bupati/TKPSDA, 7 POLA presented before the Directorate General of Water Resources (DGWR), and 3 POLA presented before the Minister of PU and awaiting ministerial decree. Of four National Strategic River Basins in Java, only one POLA from Brantas River Basin has been endorsed by PU with the ministerial decree. Two POLA, from Pemali Comal and Jratunseluna River Basin, have been presented before the special committee and are awaiting approval from the governor/Bupati/TKPSDA; the POLA from the Serayu Bogowonto River Basin has been presented before the special committee and is under revision. However, it is expected that the Ministerial decrees on POLA for Pemali Comal, Jratunseluna and Serayu Bogowonto river basin will be issued by August /September, 2010.

**Table 2.1.8. Status of Integrated Water Resource Management Plans (POLA) in river basins in Indonesia
(Source: Unpublished data from DGWR, PU as of June 2010)**

No	BBWS/BWS	River Basin (Wilayah Sungai)	Year of POLA preparation	POLA presentation to special committee	Approval by Governor / Bupati / TKPSDA	POLA presentation to DGWR	POLA presentation to Minister of PU
1	BWS Sumatera I	1 Meureudu-Baro	2009	-	-	-	-
		2 Jambo - Aye	2008	-	-	-	-
		3 Woyla - Seunagan	2009	Done	-	-	-
		4 Tripa - Bateue	2010	-	-	-	-
		5 Alas - singkil	2010	-	-	-	-
2	BWS Sumatera II	6 Belawan - Ular - Padang	2007	Done	-	-	-
		7 Batang Angkola - batang Gadis	2008	-	-	-	-
		8 Batang Natal - Batang Batahan	2008	-	-	-	-
		9 Toba - Asahan	2006	-	-	-	-
3	BWS Sumatera III	10 Indragiri	2005	Done	-	-	-
		11 Kampar	2007	-	-	-	-
		12 Rokan	2007	-	-	-	-
		13 Siak	-	-	-	-	-
		14 Reteh	-	-	-	-	-
4	BWS Sumatera IV	15 Pulau Batam	2007	-	-	-	-
		Pulau Bintan	2008	-	-	-	-
5	BWS Sumatera V	16 Anai - Kuranji - Arau - Mangau - Antokan	2007	Done	-	-	-
6	BWS Sumatera VI	17 Batang Hari	2007	Done	Done	-	-
7	BWS Sumatera VII	18 Air Majunto - Sebelat	2007	Done	-	-	-
		19 Nasal - Padang Guci	-	-	-	-	-
8	BBWS Sumatera VIII	20 Sugihan	2009	-	-	-	-
		21 Musi	2007	Done	-	-	-
		22 Banyuasin	2008	-	-	-	-
9	BBWS Mesuji Sekampung	23 Mesuji Tulang Bawang	2007	Done	-	-	-
		24 Way seputih - Way Sekampung	2008	Done	Done	Done	-
10	BBWS Cidanau - Ciujung - Cidurian	25 Cidanau - Ciujung - Cidurian	2010	-	-	-	-
11	BBWS Ciliwung - Cisadane	Ciliwung - Cisadane	2010	-	-	-	-
		26 Kepulauan Seribu	-	-	-	-	-

No	BBWS/BWS	River Basin (Wilayah Sungai)	Year of POLA preparation	POLA presentation to special committee	Approval by Governor / Bupati / TKPSDA	POLA presentation to DGWR	POLA presentation to Minister of PU
12	BBWS Citarum	Citarum	2010	-	-	-	-
13	BBWS Cimanuk - Cisanggarung	27 Cimanuk Cisanggarung	2007	Done	Done	Done	Done
14	BBWS Citanduy	28 Citandui	2006	Done	-	-	-
15	BBWS Pemali - Juana	29 Pemali Comal	2006	Done	waiting approval	-	-
		30 Jratunseluna	2006	Done	waiting approval	-	-
16	BBWS Bengawan Solo	31 Bengawan Solo	2007	Done	Done	Done	Done
17	BBWS Serayu Opak	32 Serayu Bogowonto	2007	Done	-	-	-
		33 Progo - Opak - Serang	2005	Done	Done	Done	-
18	BBWS Brantas	34 Brantas	2006	Done	Done	Done	Done
19	BWS Kalimantan I	35 Kapuas	2005	-	-	-	-
		36 Pawan	2007	-	-	-	-
		37 Jelai Kendawangan	2010	-	-	-	-
20	BWS Kalimantan II	38 Kahayan	2007	Done	-	-	-
		39 Seruayan	2008	Done	-	-	-
		40 Barito - Kapuas	2008	Done	-	-	-
21	BWS Kalimantan III	41 Mahakam	2006	Done	-	-	-
		42 Sesayap	2007	Done	-	-	-
22	BWS Sulawesi I	43 Sangihe Talaud	2007	-	-	-	-
		44 Tondano Likupang	2007	Done	-	-	-
		45 Dumoga Sangkup	2007	Done	-	-	-
23	BWS Sulawesi II	46 Limboto Bolango Bone	2007	Done	Done	Done	-
		47 Paguyaman	2009	Done	-	-	-
		48 Randangan	2008	-	-	-	-
24	BWS Sulawesi III	49 Palu Lariang	2005	Done	-	-	-
		50 Laa Tambalako	2008	Done	Done	-	-
		51 Parigi Poso	2008	Done	Done	-	-
		52 Kaluku Karama	2006	-	-	-	-
25	BWS Sulawesi IV (Sultra)	53 Lasolo - Sampara	2006	-	-	-	-

No	BBWS/BWS	River Basin (Wilayah Sungai)	Year of POLA preparation	POLA presentation to special committee	Approval by Governor / Bupati / TKPSDA	POLA presentation to DGWR	POLA presentation to Minister of PU
26	BWS Pompengan - Jenebrang	54 Pompengan - Larona	2005	-	-	-	-
		55 Saddang	2006	-	-	-	-
		56 Walanae Cenranae	2007	Done	-	-	-
		57 Janeberang	-	-	-	-	-
27	BWS Maluku	58 Buru	2009	-	-	-	-
		59 Ambon - Seram	2009	Done	-	-	-
		60 Kepulauan Kei Aru	2009	-	-	-	-
		61 Kepulauan Yamdena - Wetar	2010	-	-	-	-
28	BWS Bali - Penida	62 Bali - Penida	2007	Done	-	-	-
29	BWS Nusa Tenggara I	63 Pulau Lombok	2008	Done	Done	Done	-
30	BWS Nusa Tenggara II	64 Aesesa	2009	Done	-	-	-
		65 Benanain	-	-	-	-	-
		66 Noel - Mina	2007	-	-	-	-
31	BWS Papua	67 Mamberamo Tami Apauvar	2007	Done	-	-	-
		68 Einlanden - Digul - Bikuma	2009	-	-	-	-
		69 Omba	-	-	-	-	-

**Table 2.1.9. Status of Integrated Water Resource Management Plans (POLA) in national strategic river basins in Java
(Source: Unpublished data from DGWR, PU as of June 2010)**

BBWS/BWS	River Basin (Wilayah Sungai)	Year of POLA preparation	POLA presentation to special committee	Approval by Governor / Bupati / TKPSDA	POLA presentation to DGWR	POLA presentation to Minister of PU
BBWS Pemali - Juana	Pemali Comal	2006	Done	Waiting for approval	-	-
	Jratunseluna	2006	Done	Waiting for approval	-	-
BBWS Serayu Opak	Serayu Bogowonto	2007	Done	-	-	-
BBWS Brantas	Brantas	2006	Done	Done	Done	Done

(i) **Analysis of progress/attainments**

**Table 2.1.10. Monitoring framework for CY2009 Action 3
in the Water Resource sector**

Implementation steps	Evaluation indicators	Verification measures
<p>Coordinate with respective Balai Besar Wilayah Sungai for drafting POLA</p> <p>Provide guidelines (document) on how to prepare POLA to all Balai Besar Wilayah Sungai</p> <p>Organize workshops and training to find out the important issues of their respective basins and to include these issues in POLA</p> <p>Provide comments on and suggestions to POLA prepared by each Besar Wilayah Sungai</p> <p>Organize workshop to present corrected POLA and provide comments and suggestions to finalize it</p> <p>Approve and finalize the POLA if considered satisfactory by PU</p> <p>Endorsement by PU</p>	<p>- Finalized POLA from river basins on Java Island</p> <p>Drafts of POLA from river basins on Java Island (if not finalized)</p> <p>Corrected copies of POLA of each river basin on Java Island</p> <p>Report of workshops on drafting and finalizing POLA</p>	<p>Collecting information from the Directorate General of Water Resources (DGWR), PU</p> <p>Documents to review:</p> <ul style="list-style-type: none"> • POLA from each river basin

➤ **Status**

Of the four National Strategic River Basins in Java, only one POLA from Brantas River Basin has been endorsed by PU with ministerial decree.. Two POLA, from Pemali Comal and Jratunseluna River Basin, have been presented before the special committee and are awaiting approval from the governor/Bupati/TKPSDA; the POLA from the Serayu Bogowonto River Basin has been presented before the special committee and is under revision. The guideline for POLA preparation was issued on 31 August, 2009; the distribution of this guideline to Balai and Balai Besars was started in March 2010. Though 58 POLA have been prepared, most of these were prepared before the issuance of the POLA preparation guideline and therefore need to be revised.

➤ **Obstacles/Challenges**

The lack of a guideline and standard for POLA preparation: Preparation of POLA began in 2005 without any guidance. Therefore, the lack of a guidance and standard is one of the major constraints. However, POLA guidance was issued on 31 August, 2009 and the distribution this guideline to Balai and Balai Besars was started in March, 2010.

New Government Regulation on Water Resources Management (42/2008): Government Regulation on Water Resources Management (42/2008) was issued only in 2008. However, POLA preparation began in 2005. Therefore, the majority of POLA have to be revised to meet the Government Regulation on Water Resources Management (42/2008).

Lack of time: The PU has placed the highest priority on finalizing all government regulations related to water resources management within two years (that is, by 2010). Therefore, all governmental officials are busy preparing and finalizing these government regulations. Similarly, officials in Balai and Balai Besars are busy with construction, operation, and maintenance activities.

Lack of expertise in Balai and Balai Besars: Many Balai and Balai Besars do not have policy experts (lawyer, environmentalists, social scientists, etc.) for POLA preparation. Rather, they have capacity in engineering skills (design and construction skills).

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Until now, all Balai and Balai Besar Wilayah Sungai have prepared POLA based on the letter provided by the Ministry of Public Works. This letter is not comprehensive enough to guide the preparation of POLA. The Ministry of Public Works has already issued a guideline for POLA preparation through ministerial decree; the distribution of this guideline to Balai and Balai Besars commenced in March 2010. Therefore, a revision of the prepared POLA on the basis of the guideline for preparation has been recommended.

Outsourcing preparation for POLA to universities, NGOs, and consulting companies.

➤ **Recommendations for beyond 2010**

- Drafting Master Plans on Water Resources Management in National Strategic River Basins of Java Island.

Indication of CY2009 Action 4:

- Strengthen river basin management offices, Balai and Balai Besar.

Balai Wilayah Sungai (BWS) and Balai Besar Wilayah Sungai (BBWS) are responsible for water resource management such as planning, development, and operation and maintenance as well as the preparation of POLA in each river basin. As of October 2009, 31 river basin offices (20 BWSs and 11 BBWSs) have been established, covering 69 river basins (Name of established offices is showed in Table 2.1.8.).

(i) Analysis of progress/attainmen

**Table 2.1.11. Monitoring framework for CY2009 Action 4
in the Water Resource sector**

Implementation steps	Evaluation indicators	Verification measures
Examine the major water-related issues within the territory of each Balai and Balai Besar	Established names and numbers of river basin management offices and Balai and Balai Besars	Collecting information from the Directorate General of Water Resources (DGWR), PU
Analyse the POLA prepared by the respective Balai and Balai Besars	Increased number of technical and managerial staff in each river basin management office and Balai and Balai Besar	Collecting information from field visits to respective river management offices and Balai and Balai Besars
Analyse organizational capacity (human resources and financial)	Increased budget for the operation of each river basin management office and Balai and Balai Besar	Documents to review: <ul style="list-style-type: none"> • Annual reports published by respective Balai and Balai Besars
Requesting or allocating budget for additional human resources		
Recruiting additional human resources	Number and frequency of training attended by technical and managerial staff in each river basin management office and Balai and Balai Besar	
Planning seminars or training on IWRM and climate change		
Requesting PU or other donor agencies to provide financial support for capacity-building of human resources		

➤ Status

One hundred and twenty-one young engineers were recruited by the Ministry of Public Works. The newly recruited engineers were posted to Balai and Balai Besar and related directorates in April 2010 after completing four months of internship in the seven directorates of the PU.

The ‘Dissemination Unit of Water Resources Management and Technology (DURMT)’, which was established with the support of JICA, is already in operation. The DURMT is located in Solo City and provides training to the staff from all the Balai and Balai Besars.

Moreover some members of staffs of Balai and Balai Besars have been dispatched overseas for training, with the support of JICA, the ADB, and the Dutch Government. Through EUROCONSULT, about 60 staff members have received training from abroad.

➤ **Obstacles/challenges**

The number and experience of the technical staff in all the Balai and Balai Besars is very limited.

The roles and responsibilities of Balai and Balai Besars are not yet clear.

The lack of clear guidelines on how to coordinate with the Provincial Water Resource Council and the National Water Resource Council.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

- Recruiting more technical staff with knowledge and experience on managing water resources in a river basin in an integrated manner.
- Providing training on integrated water resources management and integrated river basin management to the existing staff at Balai Besars. The technical aspects of training should also be promoted to cope with current problems such as flooding. A recently-established DURMT can be requested to provide training on the construction, operation, and maintenance of water infrastructure, irrigation canal operating systems, reservoir operating systems, dam operations, analysis, etc.
- Request donors’ (such as JICA, the ADB, the World Bank, and others) cooperation for training.
- Retired but experienced personnel can be hired to solve problems related to water infrastructure operation and maintenance, reservoir/dam operations, etc. in the Balai Besar Wilayah Sungai (BBWS) or river basin offices.

➤ **Recommendations for beyond 2010**

- Establish ‘Water Resources Coordination Team’ or TKPSDA in all Balai and Balai Besars.

2.2. Water Supply and Sanitation Sector

2.2.1. Summary of Water Supply and Sanitation sector

<Outline of Outcome and Indication of CY2009 Actions>

The water supply and sanitation sector set as its targets the improvement of access to water supply (aimed at 68% of population) and sanitation services (aimed at 75%) in 2009. To attain these targets, a number of policy actions have been listed in four major areas: i) Water supply, ii) waste water (sewerage), iii) drainage, and iv) solid waste.

The Directorate of Water Supply Development, Directorate General of Human Settlements (Ditjen Cipta Karya: DGHS), PU, takes charge of the target of improving water supply through the implementation of water supply projects for rural areas (PAMSIMAS) and urban fringes (IKK).

The Directorate of Environment Sanitation Improvement, DGHS, PU, takes charge of the three other areas. Specifically, they are obliged to install community-based wastewater treatment facilities (SANIMAS), develop an operational standard for sewerage service providers, and issue a ministerial decree for drainage management.

Table 2.2.1. Progress and Recommendations in the Water Supply and Sanitation Sector in CY2009

Anticipated outcome 1:			
- Ensure access to sustainable portable water supply and sanitation services for non- and under-served populations (Increase the rate of household access to safe water and sanitation facilities from 50% in 2004 to 68% in 2009, and 65.3% to 75% in 2009)			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Develop community based water supply and sanitation facilities in 1,650 villages under PAMSIMAS.	Attained	- Most of the projects are expected to be completed within the first half of 2010 as the preparatory work, which usually takes 6–7 months, has already been completed and the implementation that follows usually takes 3–5 months.
2	Implement construction of 156 IKKs.	Attained	- The PU has implemented 174 IKK projects in 2009 exceeding the target. Follow up with the local governments to install distribution pipes and household connection is required to ensure the operation.
3	Develop community based waste water program (SANIMAS) in 110 locations.	Substantial progress	- The number of projects in 2010 will significantly increase to more than 400 as a special allocation fund (DAK) amounting to Rp. 357 billion has been allocated to the sanitation sector.

			<ul style="list-style-type: none"> - A large portion of this fund will be used for SANIMAS projects. The challenge is now to set up an institutional framework to implement and monitor a large number of projects with limited staff.
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
4	Design operation standard for sewerage service providers including corporate governance, tariff setting, service quality, and technical guidance.	Attained	<ul style="list-style-type: none"> - The improvement of sewerage services and water supply services (particularly in terms of the fee collection system) and the reduction of non-revenue water are necessary to improving the financial sustainability of both systems, particularly in the 11 cities in which these systems exist.
5	Issue a Ministerial Decree on Strategy and Policy for Drainage Management.	Substantial progress	<ul style="list-style-type: none"> - It is expected that the urban flood and drainage management strategies and policies, which were prepared as a draft ministerial decree and which have not been approved to date, will be incorporated in a Government Regulation (PP) of River Management. - This regulation is due to be issued in early 2010 by the DG Water Resources.

2.2.2. Background of the Policy Actions and Targets

(i) Overall situation

Water supply

Water supply in urban areas is mostly managed by water supply corporations (PDAMs). There are 335 PDAMs in the country. Their capacities need to be strengthened to improve service quality and increase access to the water supply system. The Presidential Decree Number 29 Year 2009 on Guarantee and Interest Subsidy Providing by Central Government in Relation to Drinking Water Supply Acceleration has been issued in June 2009 to increase access to water supply systems for 10 million households within five years by investing trillions of rupiahs to improve the access of PDAMs to funding sources such as equity, commercial bank loans, and bonds. In contrast, the IKK and PAMSIMAS programmes in the Policy Matrix aim to increase access to water supply in sub-district capitals and rural areas, respectively, where there is no PDAM service.

Wastewater (sanitation) management

Sanitation systems in Indonesia mostly consist of septic tanks in individual households and buildings, centralized sewerage systems in some cities, and decentralized communal systems in other areas.

The implementation of decentralised wastewater treatment systems, called DEWATS, in communities was initiated by an NGO from Germany called BORDA as a pilot project in the mid-90s. Four partner local NGOs were also involved, along with financial support from Bappenas and donors such as the Commission of the European Union (CEU), the German Federal Ministry for Economic Cooperation and Development (BMZ), Bremen City, the Australian Agency for International Development (AusAID), and the World Bank's Water and Sanitation Program. The projects were adopted in 2003 as a national programme called SANIMAS under the PU. Since then, more than 300 SANIMAS projects have been implemented and the implementation of another 97 projects is underway.

Apart from the decentralised wastewater treatment systems, there are centralised sewerage systems in 11 cities: Banjarmasin, Cirebon, Bandung, Yogyakarta, Balikpapan, Tarakan, Surakarta, Medan, Jakarta, Denpasar, and Tangerang. The improvement of these sewerage systems in terms of financial management, service quality, and operational and maintenance capacities is imperative to improve urban sanitary conditions, as is the setting of a management

standard. The former JBIC implemented a sewerage system in Denpasar; other organizations have carried out several feasibility studies in other cities, such as the study by the ADB in Medan. The PU is going to integrate two separate sewerage systems in Bandung.

Apart from sewerage systems and decentralized communal systems, septage treatment and the management of septic tanks also need to be looked into. Since many households still, and will continue to, rely on individual septic tanks, these measures are necessary to improving urban sanitation conditions.

Drainage management

The issuance of a ministerial decree for drainage management requires coordination between the Directorate General of Human Settlements (DGHS) and the Directorate General of Water Resources (DGWR). Although the issuance of this decree has been delayed, both DGs have been cooperating at the ground level to design and implement urban drainage and flood control projects such as those in Banda Aceh, Semarang, and Bandung.

Solid waste management

The related ongoing activities of the PU, the KLH, and other ministries need to be studied because the reduction within five years of waste generation within five years has been mandated by the Solid Waste Management Act 2008. The Act requires waste generation to be reduced through the application of the 3R principles in various sectors and the closing of open dumping sites (which are a large source of GHG emissions from this sector). There are a number of solid waste management projects and studies carried out by various external supporting agencies such as JICA, USAID, GTZ, BORDA, the ADB, and the World Bank.

Related laws and regulations

The following table shows the related laws, ministerial decrees, and programmes in the water supply and sanitation sector under the PU:

Table 2.2.2. Laws and regulations of the Water Supply and Sanitation Sector under the PU

Component	Laws and ministerial decrees	Programmes and projects
Water supply	<ul style="list-style-type: none"> • Water Resources Law No. 7, 2004 • Ministerial Decree on Strategy and Policies for Water Supply, 2005 • Ministerial Decree on Strategy and Policies for Water Supply, 2007 • PAMSIMAS Project Management Manual, 2008 • Ministerial Decree for Water Supply System Development of IKK, 2009 • Presidential Decree No.29 Year 2009 on Guarantee and Interest Subsidy Providing by Central Government in Relation to Drinking Water Supply Acceleration 	<p>PAMSIMAS for rural areas</p> <p>IKK for urban areas</p>
Wastewater	<ul style="list-style-type: none"> • Ministerial Decree on Strategy and Policies for Sanitation Management, signed in December 2008 	SANIMAS
Drainage	<ul style="list-style-type: none"> • Ministerial Decree on Strategy and Policies for Drainage Management, (prepared in 2006, but not issued) • Government Regulation on River Management (to be issued in 2010) 	A number of flood control and watershed management projects under the DGWR
Solid Waste	<ul style="list-style-type: none"> • Waste Management Act No. 18, May 2008 • Ministerial Decree on National Strategies and Policies for Waste Management Development, 2006 	3R projects

(ii) Priority issues

Current Conditions

Water supply

PAMSIMAS has been running well after the completion of its initial institutional setup in late 2009, which took almost two years. Thousands of projects a year in 110 districts in 15 provinces are efficiently monitored by limited staff, namely three officers at the Central Project Management Unit and 13 consultants on the field. The challenge here is project replication by local governments.

PAMSIMAS targets the implementation of 45,000 projects and 1,000 replicated projects in the

five years before FY2012. The replication, however, has not been taken place yet. Currently, the central government (PU) takes care of 70% of the project cost, 10% is shared by local governments, and 20% is taken care of by the residents and communities, including in-kind contribution. Therefore, it is a big challenge to convince local governments and residents to shoulder the total project implementation costs by demonstrating the social and environmental benefits. The PU plans to allocate incentive funds for some best performing communities and local governments to boost replication. Generally, the demand for PAMSIMAS projects is huge as the programme targets only 110 of the more than 400 districts in the country.

The priority issue for IKK projects is the improvement of operations. The operations of IKK are more costly than those of PDAMs because the coverage area is usually remote and the population density is lower. For this reason, a large number of IKKs are not financially sustainable, according to PU officers. All the same, the improvement and rehabilitation of under-performing systems, and the strengthening of financial and management capacities is necessary.

Wastewater (sanitation) management

There have been approximately 100 SANIMAS projects implemented each year for the last few years, which is slightly below the target. This was because of the high cost-sharing ratio for local governments, which is usually two-to-one between the local government and the central government. Although this trend would be expected to continue, the situation is set to change drastically from 2010 onwards because a special allocation fund (DAK) amounting to Rp. 357 billion has been allocated to the sanitation sector with a particular focus on SANIMAS projects for the next five-year national development plan. This political decision owes to political pressures exerted by seven women's groups, including one led by the First Lady of the Republic of Indonesia, that promote the improvement of the living environment and sanitation. It is expected that about more than 400 SANIMAS projects will be implemented in 2010. Now, the challenge is to set up an institutional system that systematically and effectively implements, monitors, and manages this large a number of projects.

Similarly, a large budget will be allocated for the development of sewerage systems, especially in six cities, over the next five years. The challenge here is to develop the operational and management capacities of service providers and to strengthen the financial sustainability of all systems, including those in the 11 cities.

Apart from the sewerage systems, it is also important to focus on septage (nightsoil) management systems. Septic tanks still are the main method of treating domestic wastewater in

many cities. This is because there are only 16 cities (including planned cities) that will have sewerage systems in the next five years; even then, the coverage areas of these sewerage systems will be limited. In fact, there still are bottom-less septic tanks in use, which pollute underground water. There also are many cities that do not have septage treatment facilities or functioning ones, which imply that collected septage is either dumped in either open spaces or not treated properly. Therefore, the designing of wastewater treatment master plans and septage management systems in selected cities is necessary. This can be done by applying currently-prepared standardised regulations and operational guidelines of wastewater management systems.

Drainage management

Urban drainage management is the responsibility of the Directorate General of Human Settlements (DGHS) while flood control of rivers is managed by the Directorate General of Water Resources (DGWR). Therefore, collaboration and coordination between both DGs is of priority in integrating both aspects and improving urban drainage and inundation. The concept of urban drainage is incorporated in the Government Regulation (PP) of River Management, which will be issued in 2010 by the DGWR, through the collaboration of both DGs.

Solid waste management

GHG emission can be substantially reduced through the appropriate management of solid waste, such as waste reduction, conversion of open dumping sites to be controlled, and sanitary landfills. This would, in fact, be in keeping with national targets of reducing waste generation by 20% over the next five years and closing most open dumping sites (and converting them into controlled and sanitary landfills). However, the current ICCPL framework does not contain any specific actions/targets for solid waste management. Reflecting the importance of the solid waste and drainage management sectors, the sub-directorate which used to manage both sectors have been split into two sub-directorates in 2010.

GOI's future policy framework

Water supply

- It has been recommended that targets be set not only for the implemented number of PAMSIMAS projects but also for the replicated projects by the local governments.
- The development of short- and long-term master plans for the rehabilitation of existing IKK projects, based on a baseline survey of actual financial and physical conditions, needs to be addressed.
- Similarly, the issues and problems of PDAMs need to be identified. Also, the impacts of

implemented financial policies need to be studied through surveys of the financial and physical conditions of each PDAM in order to understand their requirements and develop strategies to address them.

Waste water (sanitation), drainage, and solid waste

- Institutional setup to ensure effective implementation of over 450 SANIMAS projects a year and the monitoring of their performance is priority.
- The development of master plans, implementation of sewerage and septage management systems in 5 cities, and the rehabilitation of existing systems in 11 cities are priority areas for the next five years.
- Further, the incorporation of urban drainage systems in the development of sewerage systems in selected cities also requires attention.
- The development of solid waste management master plans needs to be addressed, with annual waste reduction targets in selected cities. Also, the closing of open dumping sites in a number of cities and their conversion into sanitary or controlled landfills need to be addressed in the next policy matrix.

(iii) JICA's and other donor's cooperation

JICA and other donors have following ongoing and past cooperation projects and technical assistance in the water supply, sewerage, drainage and solid waste management sectors. Information exchange and coordination among the organizations on a regular basis to avoid geographical duplication and also to enhance synergies are desired.

Table 2.2.3. Assistance Supported by Donors in the Water Supply and Sanitation Sector

Donors	Water Supply	Sewerage and drainage	Solid waste
Japan (JICA)	➤ Operational and maintenance capacity-building of PDAMs in West Java and technical assistance for the central government in implementing effective local water supply policies	➤ Construction of Western Denpasar and Kuta Sewerage Development Project (1 st phase completed and 2 nd phase ongoing since 2009)	➤ Regional Solid Waste Development for Maminasata, South Sulawesi
	➤ Technical assistance for the improvement of water supply systems in Maminasata region, since October 2009 (A similar project in Jakarta is planned in 2010)	➤ Technical assistance for revisions in the sewerage and septage management master plan in Surabaya and Jakarta, agreed upon between the GOI and the GOJ; implementation will begin within FY2010.	➤ Capacity Development of 3R and Domestic Solid Waste Management System in Surabaya and Palembang; Replication of Surabaya's successful community-based solid waste management model in five cities (to be initiated in FY2010);
	➤ Evaluation of IKK project status (ongoing by Nippon Koei Co., Ltd.)	➤ Development of operational standards for sewerage service providers (completed in January 2010 by Nihon Suido Consultant Co., Ltd.)	➤ Waste Management and Recycle for Building Resources Circulation Society
	➤ Technical assistance for improving the water supply system in Bali Province		
Japan (JBIC)		➤ Urban Flood Control System Improvement in Selected Cities	
World Bank	➤ The 3 rd phase of the PAMSIMAS programme (signed in 2006), 2008 -2012. AusAID providing partial financial support	➤ Urban water supply and sanitation project	
	➤ Indonesia Water and Sanitation Policy and Action Planning Facility (Phase 3)	➤ Non Structural measures and Urgent Mitigation for Jakarta Flood Control	

Donors	Water Supply	Sewerage and drainage	Solid waste
ADB	➤ Technical Assistance for Capacity Building in Water Sector	➤ Plans to implement sanitation improvement projects such as sewerage, drainage, and solid waste management systems in Medan, Makassar, and Yogyakarta.	
		➤ Flood Management in Selected River Basins (PFR1)	
Korea (KOICA)		➤ Expressed interests in improving the sewerage system in Bandung	
Netherlands		➤ Expressed interests in improving the sanitation system in Tangelang	
Denmark	➤ Southern Pekanbaru Water Supply Development Project		
USA (USAID)			➤ Comparative assessment on community based solid waste management in Medan, Bandung, Subang and Surabaya in 2006
Germany (GTZ)			➤ Climate Friendly and Sustainable City Development (Eco City) Solid Waste Improvement Management
Germany (BORDA -Indonesia)		➤ SANIMAS projects with the PU in association with four local NGOs	➤ community-based solid waste management projects, called KIPRAH ('we are pro-waste'), in selected cities

2.2.3. Analysis of progress and recommendations

Anticipated Outcome:

Ensure access to sustainable portable water supply and sanitation services for non- and under-served populations (Increase the rate of household access to safe water and sanitation facilities from 50% in 2004 to 68% in 2009, and 65.3% to 75% in 2009).

Indication of CY2009 Action 1:

- **Develop community based water supply and sanitation facilities in 1,650 villages under PAMSIMAS.**

(i) Analysis of progress/attainments

The PAMSIMAS programme has been financially supported by the World Bank since the early 90s. It is currently in Phase 3, which was signed in June 2006 and became effective in June 2008. The implementation of a total of 5,000 projects and replication of another 1,000 projects by local governments and communities are planned expected by 2013.

The average project implementation cost is about USD 20,000; of which 70 percent of this is usually funded by the central government and the rest by local governments and communities. A project usually consists of a well and distribution pipes; the number of beneficiaries per project is around 400 resulting in an average cost per person of about USD 50.

The target of 5,000 projects by 2013 is likely to be achieved as most of the 990 planned projects in CY2008 and 1,650 projects in CY2009 have been (and are being) implemented, in addition to the planned 1,320 projects and 990 projects in CY2010 and CY2011, respectively. However, the target of 1,000 replication projects remains a challenge because there are no precedent and because it largely depends on the funding capacities and willingness of local governments and communities. To address that, the PU plans to allocate incentive grants to some best performing local governments and communities in stimulating replication.

**Table 2.2.4. Monitoring framework for CY2009 Action 1
in the Water Supply and Sanitation sector**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Identify project sites (15 projects each in 110 districts) - Develop community action plan - Training and institutional setup - Detailed design - Budget allocation - Project implementation - Operation and maintenance 	<ul style="list-style-type: none"> - Project progress reports - Past project reports - Evaluation reports - Programme budget - Project implementation costs - Number of beneficiaries - Financial balance sheets - Operation and maintenance costs - Replication strategy 	<ul style="list-style-type: none"> - Interviews with ministerial (PU and Bappenas) officers, local government officers, facilitators, consultants, District Project Management Unit (DPMU) and the World Bank staff - Site visits and interviews with users and managers

➤ **Status**

Of the targeted 1,650 projects (100%), all have been initiated, 1,556 (94%) have completed the preparatory work and have signed contracts with the PU, 1,547 (88%) have received the first tranche of budget, 1,483 (90%) have received the second tranche of budget, and 1,373 (83%) have completed implementation as of May 2010.

There are six steps the project implementers have to follow before receiving project funds from the PU. They include: 1) socialization process (environmental awareness-raising activities), 2) approval of sanitary conditions by the health officer, 3) problem identification and analysis, 4) setting up of implementation organization, 5) designing of an overall community water supply system, and 6) one step specifically for the PAMSIMAS project. These processes are monitored and are reported on to a coordinator at the district level by a facilitator assigned to each project; the district-level coordinator logs the progress on the website and reports to a coordinator at the central level. In this way, the progress of each project is systematically monitored and controlled by the PU and the World Bank's project team.

Most of the projects are expected to be completed within 2010 as the preparatory work, which usually takes 6–7 months, has already been completed and as the implementation that follows usually takes 3–5 months. The monitoring and implementing systems have worked smoother this year because actual implementation started last year and because all the necessary institutional arrangements have already been set up.

➤ **Obstacles/Challenges**

Realization of replication of projects by local governments and communities is still a

remaining challenge before closing the programme in 2013.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Continuous monitoring and evaluation of the implemented projects as practices by the project team is required to maintain the high achievement rates.

➤ **Recommendations for beyond 2010**

Development of an exit strategy before closing the entire programme in 2013 taking advantage of the well-developed management structure and by securing fund is the challenge.

Indication of CY2009 Action 2:

- Implement construction of 156 IKKs.

(i) Analysis of progress/attainments

IKK projects are fully funded by the PU and local governments without any external support. The numbers of implemented IKK projects are 67 in CY2007, 92 in CY2008 and 174 in CY2009, which in total has a capacity of 5,400 litres a second of water supply catering to about 2.2 million residents. There are more than 4,000 IKKs in the country, of which only about a half function well, according to the Water Supply Development Program (SPAM) Mapping Report in 2007. One IKK project consists of water intake and treatment facilities that are funded and constructed by the PU, and distribution pipes laid by local governments. On average, a project costs USD 0.6–1 million, of which the PU finances about a half and local governments the rest.

Usually, it takes three months for the design to be completed in detail, six months for the construction of the water intake and treatment facilities, and 3–5 more years for laying pipes. One project supplies 5–20 litres of water per second, catering to 400–1,600 household connections. The number of beneficiaries per project is 2,000–8,000, assuming the average number of members per family to be 5. The challenge here is to introduce a system that improves the quality of service of the thousands of projects that already are implemented.

**Table 2.2.5. Monitoring framework for CY2009 Action 2
in the Water Supply and Sanitation sector**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Identify project sites- Detailed design by local governments (80 projects finished in CY2008)- Budget allocation- Project implementation- Installation of water pipes- Operation and maintenance	<ul style="list-style-type: none">- Project progress reports- Past project reports- Evaluation reports- Programme budget- Project implementation costs- Number of beneficiaries- Financial balance sheets- Operation and maintenance costs- Replication strategy	<ul style="list-style-type: none">- Interviews with ministerial (PU and Bappenas) officers, local government officers, and consultants- Site visits and interviews with users and managers

➤ **Status**

The number of implemented IKK projects was 174 in CY2009 which exceeds the target of 156.

➤ **Obstacles/Challenges**

Most of the installed facilities are not yet operational because distribution pipes are not installed; this installation is the responsibility of the local government and takes a few more years to complete.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Continuous monitoring and technical and institutional supports for local governments in installing distribution pipes are required.

➤ **Recommendations for beyond 2010**

The periodical monitoring and stock-taking of existing IKK projects and the conditions of these projects are necessary for identifying the required technical support to properly maintain these functions.

Indication of CY2009 Action 3:

- **Develop community based waste water program (SANIMAS) in 110 locations.**

(i) Analysis of progress/attainments

Sanitation management targets in CY2009 include the implementation of 110 decentralised wastewater treatment systems under the SANIMAS programme and the designing of an operational standard for sewerage service providers.

One SANIMAS project usually serves 100–200 households and has an implementation cost of USD 20,000–30,000, of which usually 25% is funded by the PU, 50% by local governments and the rest by donors and residents. The wastewater treatment system consists of a settling tank, a series of anaerobic baffled reactors and anaerobic filters, and a planted gravel filter and a biogas module as options. The sewerage pipes may be connected to each household or to community toilets. Washing rooms may be set on top of the facility, depending on demand. Operational and maintenance cost is minimal because the system mostly uses gravitational flow and does not require aeration (which needs a steady power supply). The system reduces the BOD and total suspended solid (TSS) values of wastewater by as much as 90 percent. Most SANIMAS projects are well-maintained as the four local NGOs closely monitor the operations of each project and provide financial incentives to the site managers to make sure the facility is clean and is used properly. The programme has capacity-building components: Project applicants from local governments and communities have a two-week training period prior to application and, once approved, another two-week training period on-site on technical and operational training.

The remaining challenge is the sustainability of the programme. Currently, local governments finance more than half of the implementation cost, which is a burden to them. There are only a few replication projects despite the implementation of hundreds of pilot projects in cities and municipalities. However, since a special allocation fund (DAK) amounting to Rp. 357 billion was allocated to the sanitation sector with a particular focus on SANIMAS projects in 2010, the constraint has suddenly been removed. The challenge is now, through a study of the costs and benefits of the projects while there still is support from DAK, to set up an institutional system to implement and monitor a large number of projects and ensure the sustainability of the programme without subsidies.

**Table 2.2.6. Monitoring framework for CY2009 Action 3
in the Water Supply and Sanitation sector**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Identify project sites (only 82 application in April 2009) - Two-week training for the applicants - Two-week training for operation and maintenance - Community awareness campaign and institutional setup - Detailed design - Budget allocation - Project implementation - Operation and maintenance 	<ul style="list-style-type: none"> - Project progress reports - Evaluation reports by local NGOs and BORDA - Programme budget - Project implementation costs - Number of beneficiaries - Financial balance sheets - Operation and maintenance costs - Replication strategy - Progress of DAK (special allocation fund) - Fund-raising activities from the private sector 	<ul style="list-style-type: none"> - Interviews with ministerial (PU and Bappenas) officers, local government officers, BORDA and local NGO partners - Site visits and interviews with the users and managers

➤ **Status**

Ninety-seven SANIMAS projects are being implemented, against the target of 110. This deficiency is due to the shortage of applications from local governments despite enough budget has being secured by the PU.

➤ **Obstacles/Challenges**

Setting up of an institutional system for the central management body and a training system for the on-site facilitators and managers to manage four times larger number of projects a year is the urgent challenge.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable, as financial constraints have already been resolved by the allocation of the DAK fund for the next five years.

➤ **Recommendations for beyond 2010**

It was initially recommended that public markets or middle- to high-income communities be targeted for the selection of project sites rather than only low-income areas because of the affordability and sustainability of the projects. The invitation of private companies to sponsor some projects as CSR activities was also recommended in order to ease financial constraints; attempts to do so, however, have not borne fruit so far.

However, as financial constraints have been eased for the next five years by the allocation of the DAK fund, the next concern is effectively and systematically managing the implementation of over 450 projects annually. Appropriate institutional setup and development of a five-year master plan are recommended.

Indication of CY2009 Action 4:

- **Design operation standard for sewerage service providers including corporate governance, tariff setting, service quality, and technical guidance.**

(i) Analysis of progress/attainments

A large budget will be allocated for the development of new sewerage systems, particularly in six cities, over the next five years. The challenge here is to develop the operational and management capacities of service providers and to strengthen the financial sustainability of these systems, including those in the 11 cities.

**Table 2.2.7. Monitoring framework for CY2009 Action 4
in the Water Supply and Sanitation sector**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Identify existing sewerage systems, operational manuals, and policies- Identify ongoing sewerage projects and available sewerage guidelines- Identify existing septage management systems and policies- Design the operation standard for sewerage service providers	<ul style="list-style-type: none">- Sewerage management status reports of existing systems, including financial balance sheets- Sewerage implementation plans for major cities- Laws and regulations regarding sewerage and septage management- Strategies to eliminate open defecation- Strategies to encourage involvement of communities- Strategies to encourage funding from the private sector	<ul style="list-style-type: none">- Interviews with ministerial (PU and Bappenas) officers and sewerage and sewerage management service providers- Interviews with external supporting agencies financing sewerage projects

➤ **Status**

The necessity of standardised operation systems for sewerage service providers has been recognised by relevant officers and some stocktaking activities of existing systems have been carried out in 11 cities. It is expected that the operational standard developed by the JICA study will help improve existing systems.

➤ **Obstacles/Challenges**

The newly developed operational standard and manuals, which are being practically used, need to be refined and improved reflecting the feedbacks from the sites.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Actual usage and implementation of the newly developed operational standard and manuals are recommended.

➤ **Recommendations for beyond 2010**

The development of operational standards not only for sewerage systems but also for septage management and treatment systems required because even where sewerage systems exist, many households still rely on septic tanks. The standardising and mandating of the usage of multi-chambered septic tanks for new buildings and the gradual phasing out of bottomless and single-chambered septic tanks are recommended for a starter.

Indication of CY2009 Action 5:

- Issue a Ministerial Decree on Strategy and Policy for Drainage Management.

(i) Analysis of progress/attainments

The urban flood control aspect is being incorporated in the currently prepared Government Regulation (PP) on River Management, which is going to be issued in 2010, through close coordination between the two Directorate Generals – DG Human Resources (DGHR) and DG Water Resources (DGWR). Although the issuance of the Government Regulation has been delayed, both DGs have been cooperating at the ground level in designing and implementing urban drainage and flood control projects such as those in Banda Aceh, Semarang and Bandung.

**Table 2.2.8. Monitoring framework for CY2009 Action 5
in the Water Supply and Sanitation sector**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Identify existing drainage management systems and policies- Identify ongoing drainage improvement projects- Identify relevant sectors other than PU and coordinate with them for integrating the policy- Draft and issue the ministerial decree	<ul style="list-style-type: none">- Roadmap and actions required for issuing the ministerial decree- Identification of issues among stakeholders and counter-measures	<ul style="list-style-type: none">- Interviews with ministerial (PU and Bappenas) officers

➤ **Status**

The draft Ministerial Decree on Strategy and Policy for Drainage Management was prepared in 2006 but has not been approved to date due to the need to incorporate the flood control aspect. This necessitates cooperation and coordination between two Directorate-Generals—the DG Human Settlements and the DG Water Resources.

➤ **Obstacles/Challenges**

Coordination between the two DGs has been delayed but pursued.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Institutional setup to ensure coordination of various relevant sectors on the ground and

demarcation of each sector's roles starting from the ongoing projects like the ones in Banda Aceh, Semarang and Bandung is required.

➤ **Recommendations for beyond 2010**

Improving the urban drainage system and mitigating the flood damages caused by frequent storm water require a coordination of various relevant sectors, including the housing, drainage and sewerage management, solid waste management, river management, road planning and land-use planning, as well as long-term investment in infrastructure development.

2.3. Agriculture Sector

2.3.1. Summary of the Agriculture Sector

<Outline of Outcome and Indication of CY2009 Actions>

The anticipated outcome from the agriculture sector is the strengthening of the institutional and regulating framework to improve the resilience of farm production and to reduce drought risk.

The sector consists of five specific actions to be achieved under ICCPL, as identified in the Policy Matrix; the progress of these actions has been summarized in Table 2.3.1. Most targets in CY2009 have more or less been achieved as of February 2010.

Table 2.3.1. Progress and Recommendations in the Agriculture Sector in CY2009

Anticipated outcome: - Strengthening of institutional and regulating framework to improve resilience of farm production and drought risk reduction.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Issue and implement guideline for strengthening operation on irrigation asset management information system	Substantial progress	<ul style="list-style-type: none"> - A draft ministerial regulation on the irrigation asset management system was prepared in October 2009; it is expected to be approved in August 2010 (as of May 2010.) - The PU is already implementing the activities under the draft Regulation.
2	Issue and implement guideline to combine P3A and farmers association function and develop pilots in 10 districts.	Exceedingly Attained	<ul style="list-style-type: none"> - A guideline for combining P3A and farmers' associations was issued. It is, however, under revision in consultation with PU. - Pilot projects were launched in 14 districts. - A case study on merging P3A and the farmers' group was conducted and is under review A new case study for the merger needs to be conducted based on the actual pilot projects.
3	Carry out System for Rice Intensification (SRI) practice: 111 packages in 21 provinces by MOA 60 packages in 9 provinces by PU	Attained	<ul style="list-style-type: none"> - All 111 packages by the MOA and 60 packages by the PU were implemented as scheduled.

No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
4	Carry out the Climate Field School Program (159 units)	Exceedingly attained	<ul style="list-style-type: none"> - The DG of Food Crops (DGFC), MOA, has completed all targeted 100 units.) - The DG of Land Water Management (DGLWM), MOA, has completed all targeted 59 units plus an extra 18 units, utilizing the loans of other donors. Thus a total of 177 units were achieved.
5	Complete a ' Semi Dynamic Cropping Calendar Map' with long-term meteorological forecast in Sulawesi and Kalimantan	Attained	<ul style="list-style-type: none"> - Map-making in both areas has been completed as planned. - More financial resources are needed for implementing training programmes (by BPTP, the Indonesia agency for agriculture technology research and assessment at the provincial level) for district administration.

2.3.2. Background of the policy actions/targets

(i) Overall Situation and Priority Issues

The State Ministry of Environment, Government of Indonesia, released the National Action Plan Addressing Climate Change (NAP) in 2007. The NAP emphasised the following six key areas in the agriculture sector: 1) Data and information management, 2) improvement of farming activities, 3) improvement of irrigation management, 4) institutional/capacity development, 5) research, and 6) socialization and advocacy (KLH 2007).³⁴ Across these key areas, water-saving farming measures have been highlighted. The recommended measures include specific activities such as the development of a System of Rice Intensification (SRI) and the rehabilitation and improvement of the irrigation network. The empowerment of farmers' groups was also mentioned in the effort of improving water use efficiency. The need for research, dissemination/management of information and technologies, and associated capacity-building are also mentioned as a part of scaling up national efforts.

The Ministry of Agriculture (MOA) has also published the Strategy of Adaptation and Mitigation to deal with Climate Change and Strategy and Technology Innovation to Cope with Global Climate Change in 2007. Since the MOA's then five-year plan (Indonesian Agricultural Development Plan 2005–2009), which was published in 2006, did not list measures addressing climate change, the aforementioned strategy is one of the first official climate policies developed by the MOA. The strategy emphasises the improvement of the resilience of farm production and the reduction of drought risk for adaptation. It pays special attention to cropping patterns and the irrigation management system/technique (JBIC 2008).³⁵ Adaptation strategies that have been and that continue to be developed include: 1) a technology and information system to predict climate change, including an agricultural early warning system, 2) Climate Field School, 3) infrastructure, particularly rural irrigation and the associated realignment of farming areas and water-use-saving techniques, 4) planting calendar, based on climate change and adaptive farming technologies, 5) good agricultural practices (GAP), 6) development of plant varieties for adaptation, and 7) farming intensification for staple crops. The last strategy utilizes technological innovations such as plant breeding, water harvesting, irrigation technologies, and cropping calendar.

In 2008, Bappenas published the National Development Planning Response to Climate Change (called the Yellow Book) in which the agriculture sector has been identified as a priority area in

34 KLH 2007. The National Action Plan Addressing Climate Change.

35 JBIC 2008. Background and policy note on climate change program loan (Cool Earth Program Loan) to the Republic of Indonesia.

adaptation. Priority activities that have been identified under adaptation are: 1) Implementation of good agricultural practices (GAP), 2) introduction and integration of a food and nutrition security system (SKPG) to prevent and minimize food crises that result from climate change, 3) increased production and consumption of local-specific food to reduce rice dependency, and 4) expansion and strengthening of Climate Field School. Priority activities under mitigation are: 1) Development of pilot model for land clearing without burning, 2) improved use of organic fertilizers to replace N-inorganic fertilizers, and 3) introduction of the recycle concept to utilize agricultural waste for bio energy (Republic of Indonesia 2008).³⁶ Bappenas is developing a roadmap that incorporates the nation's long- and mid-term development plans in the agriculture sector.

(ii) JICA and other donors' existing cooperation

There is no technical assistance that has been specifically designed by other donors for climate change (JICA 2008)³⁷. GTZ, however, conducted a Climate Change Adaptation Strategy and Action Plan for the Water Sector in Indonesia from June 2007 to June 2008. The project aimed at mainstreaming climate change issues into development planning by first focusing on the water sector and then developing proposals for strengthening institutional cooperation on adaptation (GTZ 2007).³⁸ GTZ is also assessing climate change vulnerability in Lombok and the agriculture sector (JICA 2008).³⁹

Assistance from the Asian Development Bank (ADB) and the World Bank in agriculture tends to focus on rural community development and empowerment, water resources and irrigation management, and land management. According to the ADB, Indonesia would graduate from eligibility for Asian Development Fund (ADF) resources at the end of 2008 and would be reclassified from 1 January, 2009 as a borrower eligible only for ordinary capital resources. The ADB will make efforts to adopt climate change mitigation and adaptation measures in lending operations (programme and investment loans) in conformity with the Long-Term Strategic Framework of the Asian Development Bank 2008–2020 and the Government's National Development Planning: Indonesia Responses to Climate Change (ADB 2008)⁴⁰. The Business Plan also indicates that the ADB's private sector operations will continue to consider financing feasible projects that can have high development impact in the financial, infrastructure, and

36 The Republic of Indonesia 2008. National Development Planning Response to Climate Change.

37,28 JICA 2008. Indonesia Climate Change Programme Loan Project Pre-Evaluation Chart (Title Tentative)

38 GTZ 2007. Adaptation to Climate Change.

40 ADB 2008. Country Operations Business Plan Indonesia, 2009-2011.

infrastructure-related services sectors (ADB 2008)⁴¹

The World Bank published a new strategy for FY2009–12 that marks Indonesia’s re-emergence as a confident middle-income country (MIC) that has graduated from the International Development Association (IDA) (World Bank 2008)⁴². This strategy notes that ‘Indonesia’s main constraint today is not a lack of financial resources but the need for effective and accountable institutions that can translate available resources into better development outcomes’. It identifies five thematic areas: 1) Private sector development, 2) infrastructure, 3) community development and social protection, 4) education, and 5) environmental sustainability and disaster mitigation (World Bank 2008). The World Bank Group will address climate change issues in environmental sustainability and disaster mitigation while paying attention to disaster reconstruction and helping reduce Indonesia’s vulnerability to natural disasters. In doing so, the International Finance Corporation (IFC) plans to play a ‘catalytic role in private sector engagement in climate change mitigation and adaptation efforts through its analytical and advisory work’. The World Bank Group plans to ‘seek to mainstream the discussion of climate change (with attention to both mitigation and adaptation challenges) across a range of factors to assist Indonesia in making use of the substantial funds and instruments that are becoming available to address global public goods, such as Climate Investment and the Adaptation Funds, as well as global carbon markets’. With regard to the agriculture sector, the World Bank Group plans to continue its efforts towards farmer empowerment and community agribusiness development (World Bank 2008).⁴³

Other major donors such as the International Fund for Agricultural Development (IFAD), United States Agency for International Development (USAID), Canadian International Development Agency (CIDA), and the Australian Government’s overseas aid programme (AusAID) also offer assistance in rural/agricultural and sustainable/green development and human security.

One of the anticipated outcomes of the ICCPL in the agriculture sector is strengthened institutional and regulating framework to improve resilience in farm production and to reduce drought risk (GG21 and IGES 2009).⁴⁴ Five activities have been identified to be achieved under the ICCPL: 1) The development of an irrigation asset management information system, 2) issuing a ministerial decree on merging the farmers’ association and the water users’ association (P3A) for better water resources and farming management, 3) carrying out SRI (System of Rice

41 ADB 2008. Country Operations Business Plan Indonesia, 2009-2011.

42,32 World Bank 2008. Investing in Indonesia’s Institutions.

44 GG21 and IGES 2009. Final Report on the Advisory and Monitoring Activity for the Climate Change Program Loan to the Republic of Indonesia.

Intensification) practice, 4) carrying out the Climate Change Field School Programs, and 5) making a ‘Dynamic Cropping Calendar Map’ with a long-term meteorological forecast. According to the pre-programme evaluation prepared for the ICCPL (JICA 2008),⁴⁵ the baseline (2007) for the agriculture sector is that there was inefficient irrigation management and a deterioration of irrigation assets due to the lack of management; the target is the establishment of an irrigation system/irrigation asset management and an extension service system. The main donor’s assistance in the agriculture sector and priority areas indicated in the key climate-related policy documents by the GOI are summarized in Table 2.3.2. While the climate-related projects of other donors tend to focus on specific areas, ICCPL addresses a wider range of issues in tandem with the GOI’s existing policies.

Table 2.3.2. Assistance Supported by Donors in the Agriculture Sector

Donor	Climate change-related priority areas indicated in the existing GOI’s policies			
	Climate change information collection and utilization (including early warning system, etc.)	Farming methods (research on farming technologies, improvement of farming techniques, institutional/capacity development including Field School, etc.)	Agricultural infrastructure (development of irrigation and its management, water harvesting)	Other (food and nutrition security system, promotion of locally-grown products, land clearing without burning, etc)
Focused area under ICCPL	➤ Climate forecasting and dynamic crop calendar map making for rice production	➤ System for Rice Intensification (SRI), Climate Field School, and merging water users’ association and farmers’ group	➤ Irrigation asset management system	
JICA			➤ Supporting Implementation of Irrigation Asset Management Project (SIAM) *	
World Bank		➤ Water Resources and Irrigation Sector Management Project (WISMP)		
ADB		➤ The Participatory Irrigation Sector Project (PISP)		
GTZ	➤ Adaptation strategy and action plan for water sector and vulnerability assessment (GTZ)			
AusAID				➤ Climate Change and Environment component under Human security and stability (AusAID)

Source: GOI’s published plans mentioned in this document, Indonesia kyowa koku kiko hendo taisaku shien kyoryoku puroguramu junbi chosa houkoku sho,⁴⁶ and the project database of donors.

*: JICA started the Supporting Implementation of Irrigation Asset Management Project (SIAM) in July 2009.

45 JICA 2008. Indonesia Climate Change Programme Loan Project Pre-Evaluation Chart (Title Tentative)

46 JICA 2009. Indonesia Climate Change Cooperation Programme Preparatory Finding Report (Title Tentative)

In the future, further effort will be required to mainstream climate policies in Indonesia. For better adaptation, for instance, a roadmap and the institutional capacity to implement this roadmap must be developed. Climatologic data analysis, climate change impact assessment, and vulnerability assessment all are necessary to achieve this. The roadmap being developed by Bappenas will indicate the future direction of climate policies in Indonesia.

2.3.3. Analysis of progress and recommendation

Anticipated outcome:
Strengthening of institutional and regulating framework to improve resilience of farm production and drought risk reduction

Indication of CY2009 Action 1:
 - **Issue and implement guideline for strengthening operation on irrigation system**

The irrigation asset management system was developed as planned in CY2008. In CY2009, the PU continued actions to strengthen the operation of irrigation asset management systems by issuing and implementing guidelines. The target actions and monitoring methodologies identified for CY2009 have been summarized in Table 2.3.3.

Table 2.3.3. Monitoring framework for CY2009 Action 1 in the Agriculture sector

Implementation steps	Evaluation indicators	Verification measures
Issue the ministerial regulation on irrigation asset management	Issued regulation	Collecting information/documents from the DGWR of the PU Collecting information from the ADB and World Bank as necessary.
The DGWR of the PU will identify and implement specific activities conducted by the PU under the regulation	Identification of specific activities <ul style="list-style-type: none"> • A five-year plan • Capacity-building • Irrigation asset management activities conducted by the River Basin Organization (BALAI) Progress of the implementation of the above	

(i) Analysis of progress/attainments

➤ Status

A draft ministerial regulation on the irrigation asset management system was prepared in October 2009; it is expected to be approved in August 2010 (as of May 2010).

According to an interview with Mr. Bekty Sudarmanto from the Sub-directorate of Operation and Management of the Directorate General of Water Resources (DGWR) of the PU, which was conducted in February 2010, there are four main components specified under the regulation on irrigation asset management. These components are: 1) Irrigation asset inventory-making, 2) irrigation asset management planning, 3) implementation of the plan, and 4) monitoring and evaluating irrigation asset management. These four

components have been implemented in four projects: 1) The GOI project conducted by the River Basin Organization (BALAI), 2) the Water Resources and Irrigation Sector Management Project (WISMP, World Bank⁴⁷), 3) the Participatory Irrigation Sector Project (PISP, ADB⁴⁸), and 4) the Supporting Implementation of Irrigation Asset Management Project (SIAM, JICA).

According to information obtained from the local consultant of the agriculture sector in May 2010, the development of a five-year (2010–2014) plan for irrigation asset management has already begun. The plan covers all water sector areas including fresh water for irrigation and drinking purposes. Costs were estimated per head/item; financial sources were identified in terms of loans from the GOI and from different donors; and targets for developing irrigation were identified. New irrigation will be developed for an area of 500,000 ha. Out of a total of 7.4 million ha of irrigation area for the period of 2010–2014, 1.3 million ha have been identified for rehabilitation and 2.1 million for maintenance. As a follow-up, JICA's Supporting Implementation of Irrigation Asset Management Project (SIAM) has started assisting the PU in creating a roadmap for irrigation asset management.

According to an interview with Mr. Prabowo from the Directorate of Water Resources Management of the DGWR of the PU, which was conducted in October 2009, the PU has initiated pilot irrigation projects at the district level (<1,000 ha⁴⁹) as capacity-building activities. These projects build upon the experiences of the ongoing ADB project (which is currently testing small-size irrigation (<1000 ha)). The Jatluhur irrigation project is one of the largest projects in west Java, covering an irrigation area of 240,000 ha. The budget for the Irrigation assessment management system varies from Rp. 15,000 to 25,000 per ha, depending on the area. Several capacity-building activities are being implemented such as the establishment/revitalization of P3A in pilot project locations, the establishment of an Irrigation Commission (Komesi Irigasi), and the assisting of local governments in formulating regulations and providing training on irrigation construction, according to information from the local consultant of the agriculture sector in May 2010.

The PU, in collaboration with the ADB's PISP project, has been making progress on the

47 Eighty percent of the cost is borne by the WB and the rest by the local governments (interview with Bekty Sudarmanto on 2 February, 2010).

48 Eighty-three percent of the cost is borne by the ADB and the rest by the local government (interview with Mr. Adang Ahmad on 2 February, 2010).

49 Irrigation projects covering less than 1000 ha are under the jurisdiction of local governments, 1000–3000 ha under provincial governments, and over 3000 ha under the central government.

irrigation asset management inventory. It has been completed in six provinces (Lampung, Banten, Jawa Barat, Jawa Tengah, Jawa Timur, and Sulawesi Selatan) with 33 SKPDs (Satuan Kerja Perangkat Daerah, local level technical group) as of May 2010, according to information from the local consultant of the agriculture sector in May 2010. The Directorate wishes to complete the inventory as soon as possible,⁵⁰ according to an interview with the Directorate of Water Resources Management of the DGWR of the PU that was conducted by the JICA in September 2008 (JICA 2009).⁵¹

As a GOI project, irrigation asset management that falls within the purview of the central government has been conducted by the River Basin Organization (Balai) since 2009. This project was implemented by the GOI as a 100-day programme between 30 October, 2009 and 15 January, 2010. The PU established a Technical Audit to handle the 100-day programme, according to information from the local consultant of the agriculture sector in May 2010. In addition, the PU held a consultation workshop with Bappenas, the MOA, and the Ministry of Home Affairs to discuss collaboration for irrigation asset management in 2009.

➤ **Obstacles/challenges**

Three challenges were identified during the interview with Mr. Prabowo that was conducted in October 2009: 1) Financial constraints, 2) poor coordination among central, provincial, and local governments, and 3) capacity-related constraints among project implementers in the government. Budget shortage can be observed at each level of the government, and requests for financial assistance often have to be made to the upper level of the government (from the local to the provincial governments and from the provincial governments to the central government). Poor coordination is often accompanied by slow communication between the different levels of the government. The project implementation currently relies heavily on hired temporary experts and the government officers have not gained sufficient skills through project implementation. This is especially true when considering that the DGWR of the PU handles multiple projects by different donors (the World Bank and the ADB). Training programmes for government officials (such as tagging irrigation assets by using GPS) are being implemented to address this issue. However, the problem persists because the government needs additional human resources to implement, monitor, and evaluate current, ongoing projects.

50 The Regulation on Irrigation Asset Management System, which specifies the roles of the central and regional governments in the operation of the irrigation system, was finalized in CY2009.

51 JICA 2009. Indonesia Climate Change Cooperation Programme Preparatory Finding Report (Title Tentative)

Another challenge identified during the interview with Mr. Bekty Sudarmanto that was conducted in February 2010 was insufficient human resources to implement the above regulation. For example, there are 241 irrigation schemes under the responsibility of the central government, only a few of which have completed the first two steps (inventory-making and planning) of irrigation asset management to date. There are over 32,000 small-scale irrigation schemes under provincial and district governments that require additional human resources for completion. It has been reported that most of the local government staff have to walk along the canals, noting down the status of these canals (inventory-making), which is drudgery. Even though some assistance has been provided by the consultants hired from different donor projects, the number of these consultants is far from enough to complete the job. Since the implementation of the irrigation asset management system is not a one-time job, the district, provincial, and national governments have to monitor the condition of assets on an annual basis; this is a challenge in the long run unless a mechanism can be developed that will reduce the drudgery of the task.

(ii) Recommendations

➤ Recommendations for ensuring impact

Continue to implement current actions.

➤ For stable progress

More human resources will be necessary for the GOI to complete the irrigation asset management project in a timely manner. In addition, it would help to improve the transfer of knowledge and skill between the experts/consultants hired for the project implementation and government officials. Although government officials do not need all the specialized skills necessary for implementing these projects, the implementation requires them to understand and coordinate multiple projects and manage necessary resources. Training in inventory-taking (with checks and balances) of the members of water user associations will help to ensure the quality of inventory-making. This will not only allow the involvement of local communities but will also promote the idea that the proper handling and maintenance of these assets is an important part of better irrigation management.

➤ **Needs assessment for technical assistance/potential cooperation with GOJ/JICA**

An interview with the Directorate of Water Resources Management of the Directorate General of Water Resources (DGWR) of the PU that was conducted by the JICA in September 2008 (JICA 2009)⁵² expresses the need for technical/financial assistance from JICA. This assistance is required in the area of vulnerability assessment, which the Directorate started on a small scale with its own budget, using data collected for 5–15 years from 13 irrigation facilities on water levels in wells and water flow in canals. In response to this, JICA launched the Project for Supporting Implementation of Irrigation Asset Management (SIAM) with activities such as an elaboration of the guideline for irrigation asset management, which followed up the Participatory Irrigation Sector-Project (PISP) that was financed by the ADB.⁵³

52 JICA 2009. Indonesia Climate Change Cooperation Programme Preparatory Finding Report (Title Tentative)

53 Copy of the presentation (dated 14 December, 2009) obtained from the DGWR in December 2009 (monitoring report prepared by Kartikasari and submitted to IGES, 15 January, 2010).

Indication of CY2009 Action 2:

- **Issue and implement guideline to combine P3A and farmers association function and develop pilots in 10 districts**

The CY2008 target was to amend the ministerial decree on the farmers' association to combine the functions of the water users' association and the farmers' association. However, owing to difficulties in reaching a conclusion on 'how to combine the two', these efforts did not bear fruit. Further and more thorough consideration is required of the means and methods of combining these two functions because the situations vary in each case.

In CY2009, the MOA planned to issue and implement the guidelines to evaluate the feasibility of merging the two groups, utilizing the ongoing ADB, World Bank, and EC projects. Target actions and monitoring methodologies identified for CY2009 have been summarized in Table 2.3.4.

Table 2.3.4. Monitoring framework for CY2009 Action 2 in the Agriculture sector

Implementation steps	Evaluation indicators	Verification measures
The DGLWM of the MOA will issue ministerial guidelines that will help the MOA conduct trials and feasibility assessments of combining P3A and farmers' groups	Issued ministerial guidelines	Collecting information/documents from the DGLWM of the MOA
The DGLWM of the MOA will identify and implement relevant activities in collaboration with the three existing projects (ADB PISP project, World Bank WISMP project, and EC NTB-WRMP project ⁵⁴)	Identification of relevant activities that contribute to the merging of P3A and farmers' groups. <ul style="list-style-type: none">• A case study to assess local situations and feasibility• Pilot project Progress of the implementation of the above.	Collecting information from the PU, ADB, World Bank and EC as necessary

(i) Analysis of progress/attainments

➤ **Status**

As of January 2010, the guideline for combining P3A and farmers' groups is still under discussion despite a number of consultation meetings within the MOA.⁵⁵ A pilot project on

54 Nusa Tenggara Water Resource Management Programme.

55 During the interview with the DGLWM of the MOA, conducted in January 2010, it was implied that while the PU is supportive of the merging of the water users' association with the farmers' group, internal coordination is required within the MOA. The exact reasons behind the conflict were not shared.

LEPLI (Lembaga Ekonomi Pertanian Lahan Irigasi⁵⁶) was launched in 14 districts (nine provinces) in CY2009. The aim of this project was to extend the scope of farmers' groups beyond agriculture production to better business management and other related economic activities. The Agency of Research and Development conducted a case study with the aim of facilitating the merging process through an assessment of the effectiveness of each group's activity and circumstances. The study was also intended to measure the feasibility of merging the two groups in the same year. Bureaucratic difficulties within the MOA have forced the DGLWM to proceed more cautiously in narrowing the gap between the current state and the desirable outcome.

In a case study completed in CY2009, survey data was collected in three provinces (Bali, East Java, and South Sulawesi) and analysed with three criteria (potential improvement of water resources management, agricultural productivity, and institutional capacity such as access to markets, funding, and solidarity of the group). Since the report has not yet been finalized, no details of the results were officially disclosed during the interview in January 2010. However, a quick skimming of the draft report shows the following summary:

1. In some cases there is competition between P3A and farmers' groups in accessing subsidized fertilizers, machinery, or production inputs (seeds, etc.) provided by the MOA;
2. There has also been an overlap in the implementation of the same training programmes (e.g. SRI);
3. Capacity of human resources and management strategy in each P3A and farmers' group is still limited;
4. Existing regulations list water (and its infrastructure) under the MOA's mandate. Also under this mandate are the management of production inputs, facilities, and infrastructure; thus, the distribution of agricultural inputs, including water resources, is expected to become easier when the two entities are merged at the village level;
5. The merger of P3A and farmers' groups is expected to improve the welfare of farmers through improved post-harvesting activities (marketing/agri-business); Farmers' responses to the merger plans were split down the middle—some agreed and wished for a better system and better access to government support while others were pessimistic about the outcome; and
6. The case study conducted by the MOA recommended that the MOA, in designing the merged institution, evaluate two existing regulations and identify more carefully the

56 The name given to the new village organization integrating P3A and the farmers' group. The tentative English translation is 'economic and agricultural institution on irrigation land'.

roles of the divisions in charge and the needs at the village level.

➤ **Obstacles/challenges**

The mismatch in the boundaries of the water users' association and the farmers' group poses a problem in merging these two groups (as stated by Mr. Djodi Tjahjadi K, Executive Secretary of the DGLWM of the MOA, in an interview conducted in October 2009). The water users' association is based on water resource/irrigation management and the farmers' group is based on administrative area. Although the management of tertiary canals was transferred to the MOA, the federation of the water users' association (a national organization) still belongs to the PU, making it difficult for the MOA to supervise its associations.

It became clear during a follow-up meeting with the DGLWM in January 2010 that the planned action had no lucid procedure/roadmap, partly due to the lines of duty not being clearly demarcated. Judging by the latest findings, it is likely that some P3A and farmers' groups will be merged⁵⁷ and that others will be left unmerged based on feasibility, extent of expected benefits, and farmers' willingness.

Although a case study was conducted to facilitate the process of merging the two groups, the recommendations of the study were based on a limited number of cases (24 groups in three provinces). The results suffer from lack of data at the macro level that can provide a better indication of the feasibility of merging these two groups. An example of this necessary data is how much overlap or mismatch actually exists between the watershed-based boundary (the water users' association) and the administrative boundary (farmers' group).

In Japan, development in water resources management includes: 1) The integrated approach of irrigation infrastructure development and land improvement, accompanied by extension services and 2) the needs-driven approach, e.g. farmers need to petition for such projects and shoulder their cost as beneficiaries.⁵⁸ In China, the concept of a farmers and water users' association (WUA) was first introduced by the World Bank Yangtze River Water Resources Project in 1994; today, over 40,000 WUAs operate in rural China. Each

57 Such as a pilot case in Sukabumi district in West Java, where the Agency for Development Planning at the provincial level (BAPPEDA) had already adopted the arrangement for merging P3A and the farmers' group (monitoring report prepared by Kartikasari and submitted to IGES, 15 January, 2010).

58 Naraomi Imamura et al. 1984. Social structure of irrigation systems. United Nations University.

WUA: 1) is the farmers' own organization, 2) is formed on hydrological boundaries, and 3) collects water fees from farmers.⁵⁹ Judging by the precedents in other Asian countries, the Indonesian agriculture sector seems headed in the right direction. The benefits of participatory irrigation management by users/farmers, however, need longer-term efforts before they can be realized.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Review findings of the case study; share these findings with the associated authorities; and discuss strategies and procedures/roadmap to proceed with supplement actions planned by the DGLWM (such as identifying the characteristics of P3A and farmers' groups, the need for training/facilitation of the merged group, and finalization of management regulations).

➤ **For stable progress**

The merging of the water users' association and the farmers' group will bring about fundamental structural changes to farming operations not only at the farmer's level but also at those of the central/regional/district governments. A long-term commitment by the MOA is necessary to achieve the required outcomes.⁶⁰

59 Farmer Water Users' Association in China- Making a Difference (information sheet, <http://files.inpim.org/CBP/SS%20Learning%20WUA-Flyer.pdf> (accessed on 25 December, 2009).

60 The letter soliciting the attention from the Minister of Agriculture was sent from the Director General of Land and Water Management (Dr. Hilman Manan) (dated January 2008).

Indication of CY2009 Action 3:

- Carry out System for Rice Intensification (SRI) practices in 21 provinces (111 packages, MOA) and 9 provinces (60 packages, PU)

In CY2008, the System of Rice Intensification (SRI) was implemented as planned at 66 sites in nine provinces.

In CY2009, targets were set for 111 packages in 21 provinces and 60 packages in 9 provinces by the MOA and PU, respectively. The target actions and monitoring methodologies identified for CY2009 have been summarized in Table 2.3.5.

Table 2.3.5. Monitoring framework for CY2009 Action 3 in the Agriculture sector

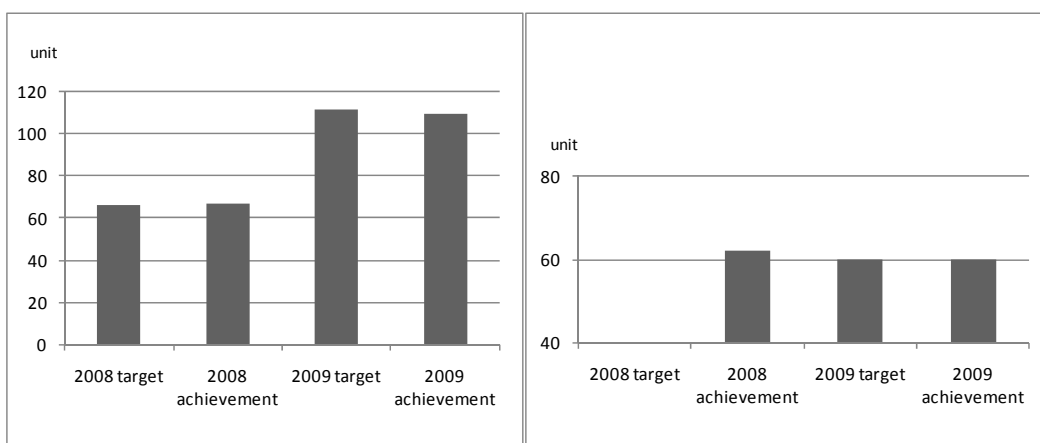
Implementation steps	Evaluation indicators	Verification measures
The DGLWM of the MOA will carry out SRI practice in 21 provinces (111 packages) and the DGWR of the PU in 9 provinces (60 packages)	Progress of the implementation of SRI practice <ul style="list-style-type: none">• Number of packages• Areas• Number of farmers participated• Record of water use/saving• Yields	Collecting information/documents from the DGLWM of the MOA and the DGWR of the PU Collecting information from local extension agents and farmers
In addition, it is desirable that the DGLWM of the MOA and the DGWR of the PU collaborate to expand SRI projects on the national scale	Strategies to expand SRI projects on the national scale	Collecting information from local researchers if available

(iii) Analysis of progress/attainments

➤ **Status**

All 111 packages by the MOA and 60 packages⁶¹ by the PU were implemented, as scheduled. There has been a steady rise over the last two years in the MOA's efforts to promote SRI (see Figure 2.3.1.).

61 Sum of the demonstration of SRI and training components.



Notes: No target was set by the PU 2008.

Figure 2.3.1. SRI conducted by the MOA (left) and PU (right) in CY2008 and CY2009

The MOA's SRI package (20 ha/package) consists of five days of indoor training followed by 15 weeks of field training and the provision of facilities for organic fertilizers (two sets) and seedlings (50 kg) (as stated by the DGLWM of the MOA in an interview conducted by JICA in August 2008; JICA 2008)⁶². The training programmes implemented by the Research and Development section of the PU were found to be similar to those implemented by the MOA: The PU training includes indoor training for one week, followed by outdoor training for three months, using farmer field schools (FFS).

The MOA's SRI has a follow-up component that supports the continuation of activity in the following year (in so called impact areas⁶³) (as stated by the DGLWM of the MOA in an interview conducted in January 2010). While the standard SRI programme package (provision of seeds, demonstration field, and associated training) is provided in the first year, limited but continued support (provision of seeds and machinery⁶⁴ for limited areas) is available during the second year to sustain SRI activities. For example, a target of 111 packages was set for the introduction of SRI in new areas; a target of 70 packages was set for follow-up activities in 2009.

In the PU programme, the head of the water users' association usually coordinates and implements the FFS.⁶⁵ The PU does not provide equipment or other inputs (as stated by Mr.

62 JICA 2008. Indonesia Climate Change Programme Loan Project Pre-Evaluation Chart (Title Tentative)

63 The number conducted of this component has not been counted in the target number set in the Policy Matrix.

64 Such as straw shopper.

65 In SRI conducted by the PU, most of the physical implementation was funded by the Participatory Irrigation Sector Project (PISP) by the ADB (implemented by the PU, MOA, Internal Affairs, Bappenas, and local

Prabowo, representing the Directorate of Water Resources Management of the DGWR of the PU, in an interview conducted in October 2009). The SRI project (as stated by Mr. Adang Ahmad from the Directorate of Irrigation of the DGWR of the PU in at interview conducted in February 2010) was initiated upon request from the government at the district level and was implemented by the Province Project Implementation Unit (PPIU). The PPIU is a coordination body at the district level that comprises local government officials in charge of agriculture and irrigation matters. Consultants are hired to work with the PU and MOA; other consultants are hired to work with the Ministry of Home Affairs. The latter consultants train the local consultants, who implement SRI. Basically, SRI is conducted jointly by the PU, MOA, and the Ministry of Home Affairs.

SRI can be organic or inorganic or a mix of both. Young seedlings 8–12 days old are transplanted at a distance of 25 x 25 cm or 30 x 30 cm. Weeding and pest control are important aspects. Soil is kept moist, not flooded. SRI can be adapted easily to local conditions and is hence considered to be versatile, according to Dr. Iswandi Anas, Chair of the Ina-SRI,⁶⁶ from the Bogor Agricultural University in an interview conducted in October 2009.

The performance of the SRI has been examined in various locations across the world, including Indonesia (about 36 countries, 2009). According to Dr. Anas, Bogor Agriculture University, SRI is being promoted in nearly eight provinces in Eastern Indonesia, with 12,333 farmers across 9,429 ha, with positive results.

Research elsewhere indicated advantages such as 78% yield increase, reduction of 50% in inorganic fertilizer use water savings of 40%, and 20% lower input costs. Stimulated root growth is the reason for reduced fertilizer use (Sato and Uphoff, 2007)⁶⁷. Evaluation in eight countries has indicated a yield increase of 52%, water savings of 44%, and 25% lower input costs.

In the case of the Indonesian SRI, some of the results are as follows:

Yields in recent studies conducted by Ardi, Sugiyama, and Musliar indicated increased yields of 6.85 t/ha–10.5 t/ha when compared to the 5.5 t/ha from conventional rice

governments at the provincial and district levels). 'Soft' components (training/workshop) were funded by APBN (Indonesia national budget). In addition to the above, JICA has been implementing the Decentralized Irrigation Sector Improvement Management Project (DISMP) in eastern Indonesia (monitoring report prepared by Kartikasari and submitted to IGES, 15 January, 2010).

66 The Indonesian Association for SRI.

67 Sato and Uphoff 2007. A review of on-farm Evaluations of system of rice intensification methods in Eastern Indonesia.

(24.5% increase).⁶⁸ Trials by Anas indicated that the yields were 3.59 t/ha in conventional compared to 4.35 t/ha in inorganic-SRI (21.2% increase) and 3.55 t/ha in organic-SRI (1.1% decrease). The yield advantage was lower due to late transplantation and pest damage. SRI in Java, which was conducted by the MOA, reported a yield of 8.1 t/ha (35% increase) compared to 6.0 t/ha from conventional paddy, according to an interview with the DGLWM conducted in January 2010. Even higher yields in the range of 8.1–12.2 t/ha were reported for SRI by the DGWR of the PU (yields have not been measured on the basis of standard moisture content).

Methane emissions can be reduced by intermittent irrigation and by growing different rice cultivars (modifying genotype). These methods are not practiced by farmers due to their lower yield advantage. SRI, however, provides yield advantage while mitigating GHG emissions. Measurements indicated that emissions from conventional fields was 2391.12 [mg C-CH₄ m² per hr] while emissions from inorganic-SRI (only synthetic chemical fertilizers were applied) and organic-SRI were -0.76 and -55.17 [mg C-CH₄ m² per hr], respectively.⁶⁹

N₂O emissions have are higher with SRI than with conventional methods when inorganic fertilizers are applied. On the other hand, organic matter addition has suppressed N₂O emission due to a change in microbial population.

The total number of microbes was higher in the organic SRI while there was no significant increase in the inorganic SRI. **Soil fauna and diversity** was higher in the organic SRI than in either the conventional or the inorganic SRI.

The numbers of tillers was higher in SRI crop, at about 41 tillers per hill (inorganic-organic) compared to conventional (30 tillers/hill).

Water saving was reportedly improved by 40%, according to material provided by the DGLWM in January 2010.

Seedling saving was reported to be 70%, according to material provided by the DGLWM in January 2010.

68 Traditional practice is planting 25–30-day old seedlings with six seedlings per hill and five cm continuous flooding for the entire crop. 250 kg Urea, 200 kg SP-18, and 100 kg KCL per ha were used for fertilizer. SRI, on the other hand, involves transplanting one seedling per hill with eight-day old seedlings along with bio-fertilizers (optional). The national average in 2008 was 4.835 t/ha, according to the Statistical Yearbook of Indonesia.

69 Negative values indicate reduction. Unexpected results (increase in methane emissions) were observed when both inorganic and organic fertilizers were applied; the reasons for this are unknown.

NGOs are playing an active role in the implementation of SRI, as in the case of the MOA project. The national-level training of trainers (TOT, training district level trainers) is conducted by three Indonesian NGOs (NOSC, AOSC, and Eco farm).

In addition to the central government's SRI projects, local governments are engaged in SRI using their own budgets. South Sulawesi province implemented SRI in 11 irrigation areas in CY2009.⁷⁰

Universities and other organizations have also been active in the promotion of SRI. Bogor Agricultural University is collaborating with the DGLWM of the MOA to train provincial services personnel and to conduct workshops. The NOSC (Nagrak Organic SRI Center, an independent centre⁷¹) offers training to farmers in collaboration with the Bogor Agricultural University. More farmers are reportedly showing interest in the SRI due to advantages such as lower seed use, lower nursery area, less time in the field, and lower water use. Farmers who were willing to work hard were often impressed by the benefits of SRI.

There are, however, technical and institutional challenges. There is a deficit of organic fertilizers for enhanced implementation of organic SRI. This was confirmed in an interview with the DGLWM in October 2009. According to this interview, the Directorate of Land Management is conducting a programme to develop machinery to produce organic fertilizers.

An interview was conducted with the Sub- directorate of Land Reclamation in the DGLWM, MOA, in January 2010 to follow up on issues of organic fertilizers. It was learnt during this interview that the MOA had drafted a ministerial decree to introduce new regulations for fertilizers, to be finalized by the end of Jan 2010.⁷² The new regulations aim to subsidize fertilizers to poor farmers and to stabilize their market prices. The flow of subsidies is a fundamental change from those under current regulations. In the new proposal, farmer groups at the village and sub-district level are required to submit annual fertilizer needs and cropping plans to the provincial agricultural department; the fertilizer needs are eventually compiled at the national level. The MOA transfers subsidy money to the bank accounts of farmers' groups based on the annual fertilizer requirements submitted. The subsidy that farmers receive is based on the fertilizer price fixed by the government. Farmers will have to pay the actual market price while purchasing fertilizers. That is, they will have to pay the

70 Monitoring report prepared by Kartikasari and submitted to IGES, 15 January, 2010.

71 www.noscenter.com

72 One of the government's first 100-day programmes in 2009.

difference if the market price is higher than the government fixed price or they can use the unspent money for farmers group activities if the market price is lower than the government fixed price. Under the current regulations, subsidies are paid to fertilizer companies, resulting in imbalanced fertilizer supply. The new regulation is expected to reduce fertilizer use and reduce government expenditure on subsidies. The change in regulations indicates that the government aims to give more responsibility to farmers, as has been done in water resources management.

The above regulations are directly related to chemical/synthetic fertilizer use. However, the GOI also aims to increase organic fertilizer use. The MOA plans to utilize the savings from fertilizer subsidies to make more organic fertilizers available to farmers by encouraging them to produce organic fertilizers. As with synthetic fertilizers, subsidies paid to organic fertilizer producers (fixed price is Rp. 500 per kg) will be banned under the new regulations. The money will instead be spent to increase the capacity of organic fertilizer manufacturing (compost) through the compost house, livestock (cows), machinery (grass chopper), and training. One hundred and sixty compost house units were built in 20 provinces in 2009 and 235 units (without livestock) are being planned for 2010.

Another new action at the MOA is that in 2010, divisions in charge of machinery, fertilizers/pesticides, and other agricultural input management functions will be transferred to the DGLWM. This change implies that the DGLWM is going to be responsible for a wide array of agriculture input management, including water.

➤ **Obstacles/challenges**

Although the SRI farming technique is well-established, a major hurdle in the introduction of this technique is the changing of the mindset of farmers on rice production. This is because these farming techniques are quite different from conventional techniques. This was a major reason why SRI could not be introduced in West Papua. The SRI is considered to be more labour-intensive and knowledge-intensive than conventional systems because of the need for precise levelling, transplantation of tender seedlings at regular spacing, frequent weeding, and precise water management (GG21 and IGES 2009).⁷³ Thus, SRI may not be suitable for households without enough agricultural labour. Even with the manual developed by the MOA for extension agents, SRI requires intensive training and a deep understanding of the subject. The farmer needs more evidence of economic benefits

73 GG21 and IGES 2009. Final Report on the Advisory and Monitoring Activity for the Climate Change Program Loan to the Republic of Indonesia (June 2009).

and the policy maker needs more evidence of environmental benefits (particularly water-saving impacts for adaptation).

The PU is currently collaborating with the MOA in implementing the SRI component in the Chiramajaya irrigation project area (800 ha). However, more coordination and collaboration of this sort is necessary since irrigated areas under primary and tertiary canals are still under the PU. The spreading of the SRI in Indonesia can help expand support for training of trainers (TOTs), which requires more funds from both central and district-level governments (Dinas Pardania).

(iv) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

There may be no need to merge and centralize existing SRI activities that are carried out by the ministries (the PU and MOA) and the universities. However, since collaboration at the district level is in place, lessons learned and/or good practices should be collated and made available to those who wish to start similar farming activities. More data collection and science-based assessment should be conducted for potential practitioners to learn efficiently and avoid mistakes. TOT is vital. The data collected also informs policy makers of the significance of SRI. When more scientific evidence is documented, SRI can possibly even be considered a mitigation effort.

The MOA has targeted the implementation of 62 SRI packages in eight provinces and the PU has targeted 79 packages in seven provinces in 2010 (as of February 2010). Due to the budget cut, the MOA's target is lower than it was in 2009 and no follow-up (impact areas) has been scheduled for 2010. However, the MOA has secured funds from the ADB to implement SRI in an additional 3,000 ha; it is also likely to receive a grant from the Government of Japan for an additional 1,000 ha.⁷⁴

74 USD 350,000 is requested for the Second Kennedy Round Program of Japan. This is a monetary aid grant to procure necessary agricultural equipment and material from overseas in order to increase food production. It is also known as the 'Grant Aid for Increase of Food Production'.

Indication of CY2009 Action 4:

- **Carry out Climate Field School Program (159 units)**

In CY2008, the target of implementing 100 units of the Climate Field School (CFS) was achieved as planned. The target actions and monitoring methodologies identified for CY2009 have been summarized in Table 2.3.6.

Table 2.3.6. Monitoring framework for CY2009 Action 4 in the Agriculture sector

Implementation steps	Evaluation indicators	Verification measures
The DGFC and DGLWM of the MOA will carry out 159 units of the programme	Progress of the implementation of the programme <ul style="list-style-type: none">• Number of units• Areas• Number of farmers participated	Collecting information/documents from the DGFC and DGLWM of the MOA
In addition, it is hoped that the DGFC and DGLWM of the MOA will assess the current programme and collaborate to boost the efficiency and scale of the technology transfer, in cooperation with the Indonesian Agroclimate and Hydrology Research Institute (IAHRI) and Meteorology Agency (BMKG)	Plans for improvement of the programme <ul style="list-style-type: none">• Assessment of the current programme• Identified challenges• Good practices	Collecting information from the IAHRI and BMKG Collecting information from local researchers if available

(i) Analysis of progress/attainments

➤ **Status**

The DGFC of the MOA completed the establishment of all targeted 100 units of the Climate Field School; the DGLWM completed all targeted 59 units plus an extra 18 units using funds from a non-GOI fund (donor). A total of 177 units were established. A comparison of achievements between CY2008 and CY2009 is shown in Figure. 2.3.2.

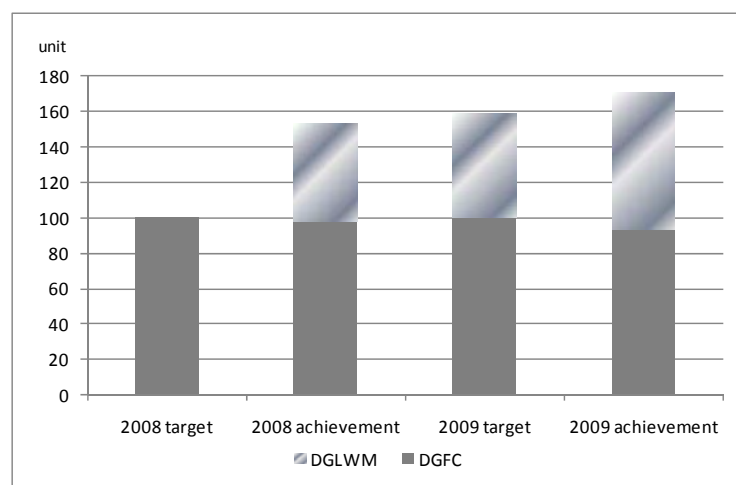


Figure 2.3.2. Climate Field School conducted by the DGFC and DGLWM of the MOA in CY2008 and CY2009

The scale of the CFS Program seems rather modest considering the number of farmers and the areas in which they are engaged. The annual target of 159 units will train approximately 3,200–4,000 farmers on 3,200–4,000 ha of farmland in 2009. This has been calculated using the average number of participating farmers and associated coverage farming area, which is reported to be 20–25 farmers and 20–25 ha per unit, respectively (IGES 2009⁷⁵). The total agriculture population and paddy land, however, was 88.3 million people and 12.1 million ha⁷⁶, respectively, in Indonesia in 2007 (FAOSTAT 2009)⁷⁷. According to an interview conducted by the JICA in August 2009,⁷⁸ although the DGLWM of the MOA dispatched about 10,000 extension agents to conduct the Field Training Program, it sensed the lack of capacity and human resources.

Currently, the Climate Field School is conducted separately by two divisions (the DGFC and DGLWM) in the MOA. Each programme has been developed with special focuses: The DGFC programme focuses more on plant protection (pest management, etc.) and farming techniques; the DFLWM programme focuses on irrigation management, which addresses climate-related issues more directly. The DGFC, which has been conducting Farmers Field School (FFS) since 1998, has accumulated know-how on conducting field schools. Priority sites were chosen for FFS based on a vulnerability analysis. The Climate Field School was developed on the experiences of the FFS and is thus almost identical in structure, which is sometimes a cause of confusion to farmers. The cropping calendar,

75 Final Report on the Advisory and Monitoring Activity for the Climate Change Program Loan to the Republic of Indonesia (June 2009).

76 Harvested area. Indonesia's total arable land is 22 million ha (FAOSTAT 2009).

77 FAOSTAT website. <http://faostat.fao.org/default.aspx> (as of 26 February, 2010).

78 JICA 2009. Indonesia Climate Change Cooperation Programme Preparatory Finding Report (Title Tentative)

which has been produced by the Indonesian Agroclimate and Hydrology Research Institute (IAHRI), is being introduced at the provincial level and is yet to be integrated into the training curriculum of the Climate Field School Program.⁷⁹ Although each programme has its strengths, a unified programme that incorporated the lessons and know-how of each division would help scale efforts up to the national level. To address this issue, the two divisions, in collaboration with Bogor Agricultural University, commenced discussions in 2009 on how to integrate the two programmes into one comprehensive programme.

Ms. Ati Hamid, Director of the Directorate of Crops Protection, the DGFC of the MOA, expressed during an interview conducted in October 2009 that it was important for the local government to receive support for the Climate Field School from the central government. This support is important even though district and sub-district governments are expected to use local budgets and not depend on the national budget (because of the decentralization in 2002 that has handed over power/responsibilities to these levels).

Dr. Lala Kolopaking from the Bogor Agricultural University, when interviewed in October 2009, shared his views on how local people adapt to climate change and the kind of institutional mechanisms that can be evolved based on participatory processes, as follows:

More centralized and uniform regulations are needed that can control and promote local institutions without leaving them to the capacity of the local governments. Although several adaptation options⁸⁰ and strategies⁸¹ are already in place at the local level, the central government needs to understand the demands of the provincial and sub-provincial governments before effective adaptation can be promoted. For example,

79 The Climate Field School Program includes general principles of climate, how it influences agriculture, how to count rainfall, and how to interpret rainfall in rain gauges. It consists of the following 12 modules/meetings: (1) what is climate; pests and diseases control in relation to climate; etc. (2) introduction to climate factors such as temperature and rainfall, (3) process of rainfall development in terms of water cycle, (4) terminology of climate and prediction, (5) understanding the concept of probability, (6) introduction to rain gauge equipment, (7) field trip to climatology station, (8) utilization of climate information for optimization of planting strategies, (9) water balance and irrigation, (10) economic valuation of climate information, (11) controlling flood and drought, and (12) field day. All these aspects are taught in a practical, hands-on manner. The DGFC conducted post-CFS evaluation in five provinces to investigate problems, achievements, and responses from farmers; The DGFC is revising the curriculum to develop additional modules based on this evaluation. The problems identified include limited skill of weather forecast and limited equipment for climate monitoring.

80 Include the development of dams/aqueducts for rain water harvesting, normalization of rivers, development and rehabilitation of irrigation channels, development and rehabilitation of drainage systems, application of water-saving technology, cropping pattern development, agriculture varieties development, community development, and institutional assistance to conduct anticipative adaptation.

81 Include institutional development strategy, capacity-building of community level institutions, and management development strategies such as community-based multi-stakeholder collaborative management.

in the case of irrigation management, the local government is willing to manage the irrigation of a province in which the irrigation project area is larger than 1000 ha (and which therefore technically falls under the provincial government's management). Often, however, provincial government representatives (Bupati) are not very cooperative with local government officials.

A **more participatory process** is required to manage water resources management. A survey was conducted using participatory rural appraisal techniques in five case study villages of the concerns of farmers and their possible solutions. The survey indicated that various stakeholders in the community, both upstream and downstream, should be involved in designing, implementing regulations, and solving disputes. The establishment of irrigation field school was proposed.

The **capacity-building of local governments** also needs improvement **to manage activities for local cooperatives**. Although some local governments and cooperatives are relatively active, such as those in Bogor, many have poor capacity for managing local cooperatives. In this sense, it may be better for a national level authority rather than a local government to manage training activities such as the Climate Field School. Dr. Kolopakin observed that local cooperatives were more active in sourcing funds from the central government, but that as decentralization progressed, they became weak due to the lack of funds to support their activities.

A field trip was conducted in Indramayu district (approximately 200 km east of Jakarta) in January 2010 to investigate the implementation of CFS at the local level.⁸² Indramayu is a priority area for the pilot CFS Program conducted by the local government with its own budget. Farmers in Indramayu constantly struggle with water shortage because agricultural land is located at the tail-end of irrigation canals, making their livelihood vulnerable. Following up on the national CFS Program conducted in 2003–2004, the Indramayu district government launched its own CFS in 2004. The main points of this field trip are as follows:

1. The Climate Field School Program needs to be tailored to local needs.
2. Leadership and collaborative work with supporting staff is necessary for the success of CFS.
3. Sustainability of efforts and scaling up/duplication of good practices is essential.
4. Earlier, reliable weather forecasts are necessary to advance

⁸² Officials from the MOA's local office (including the former director of the office), the district government, and the village, the leader of a farmers' group (Nunuk village), extension agents, the people in charge of irrigation, and other stakeholders participated in the field trip.

preparation/adjustment of farming activities.

Scaling-up is found to be very challenging. In the case of Indramayu district, only 2–3 farmers' groups out of a total of 1,231 receive training opportunities every year.⁸³ A system for expanding training for trainers is urgently required for scaling up the CFS. Follow-up on trained farmers (CFS Part 2) has also been discussed to sustain these efforts. In addition to scaling up the CFS, technical assistance is necessary for introducing adaptation technologies. The most commonly found adaptation practice is adjusting the planting season of rice, the staple crop. However, full-blown adaptation involves more drastic changes (such as planting alternative crops to rice) that require a higher level of farming knowledge and finer weather forecasts to support decisions.

➤ **Obstacles/challenges**

Increasing the number of trainers is essential to scaling up the implementation of the Climate Field School. Typically, TOT is provided by central government officials to provincial officials (two from each province); the provincial officials (extension agents) train district officials; and district officials train farmer groups. To this end, the training of trainers at the central, provincial, and district levels need be strengthened.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

As the targets are already achieved, no recommendations are made.

➤ **Recommendations for beyond 2010**

For more efficient adaptation, a unified programme and scaled-up operations should be used to reach out to farmers. The DGFC is now finalizing a national curriculum for CFS.

The DGFC and DGLWM plan to conduct 200 and 65 units of CFS, respectively, in 2010.

➤ **Needs assessment for technical assistance/Potential cooperation with GOJ/JICA**

According to an interview with the Directorate of Food and Agriculture of the Bappenas,

⁸³ Roughly 0.2% of farmers receive training. If calculated based on the number obtained during the interview (average 75 farmers out of 700,000, per year), the ratio becomes even smaller (0.01%).

conducted by the JICA in September 2009 (JICA 2009)⁸⁴, specific assistance is necessary for the development of agriculture infrastructure to increase the capacity of farmers to respond to climate change. According to an interview with the DGLWM of the MOA, conducted by the JICA in September 2009 (JICA 2009)⁸⁵, the BMKG is in charge of collecting climatologic data (exposure) and assessing climate sensitivity, adaptive capacity, and vulnerability. In the assessment of climate sensitivity, agriculture has been identified as a high priority sector, along with the energy sector. The BMKG plans to obtain drought data from the MOA. To assess adaptive capacity, the BMKG plans to make a map of the agriculture sector using data such as farmer's capacity and available water resources. To assess vulnerability, the BMKG holds workshops for participants from the line ministries and the regional government (district levels); the BMKG holds that the line ministries are responsible for adaptation measures based on the aforementioned BMKG vulnerability map. This is based on the precedent of a project by the Canadian International Development Agency (CIDA). The BMKG expressed its interest in technical support from JICA.

According to an interview with Mr. Basuki from the Agro Climate and Maritime Division of the BMKG, which was conducted in May 2010,⁸⁶ there are several vulnerability maps being created and/or circulated. These maps include the Atlas of Agroclimate Suitability, the Vulnerability Map of Flood, the Vulnerability Map of Drought, and the Map of Maximum Rain and Repeated Period.

Atlas of Agroclimate Suitability

The Atlas has been created by the BMKG together with Dinas Pertanian (Department of Agriculture at the local level) with the objective of providing recommendations based on water availability, soil texture, climate information, land use, etc. The BMKG has already created a few atlases on Central Java, East Java, and Sumatera; an atlas for West Java will be developed in 2010.

84,74 JICA 2009. Indonesia Climate Change Cooperation Programme Preparatory Finding Report (Title Tentative)

86 Report provided by Doddy Irawa in May 2010.



Figure 2.3.3. Image of the Atlas of Agroclimate Suitability

The Vulnerability Map of Flood, Vulnerability Map of Drought, and Map of Maximum Rain and Repeated Period

The BMKG has been creating these maps for the following areas (Tables 2.3.7., 2.3.8., and 2.3.9.).

Table 2.3.7. Vulnerability Map of Drought

Year	Regency/Province	Year	Regency/Province
2009	Madiun	2010	Samarinda
	Magetan		Manado
	Kudus		Sragen
	Pasuruan		Sukoharjo
	Jember		Klaten
	Pekalongan		Purworejo
	Kulonprogo		Pemalang
	Pandeglang		Lamongan
	Tangerang		Kendal
	Cirebon		Probolinggo
	Tuban		Banyuwangi
Makassar	Subang		

Table 2.3.8. Vulnerability Map of Drought

Year	Regency Province
2005	Indramayu
2006	Jawa Timur
	Lampung
2007	Jawa Tengah
	Sulawesi Selatan
2008	NTB
2009	Sumatera Utara
2010	Jawa Barat
	Banten

Table 2.3.9. Vulnerability Map of Flood

Year	Regency	Year	Regency
2006	Banyumas	2009	Madiun
	Grobogan		Magetan
	Semarang		Kudus
	Situbondo		Pasuruan
	Surabaya		Jember
	Sidoarjo		Pekalongan
	Oki		Kulonprogo
	Oku		Pandeglang
	Palembang		Tangerang
2007	Cilacap	2010	Cirebon
	Jombang		Tuban
	DKI		Makassar
	Medan		Samarinda
	Lampung Barat		Manado
	Mojokerto		Sragen
	Palu		Sukoharjo
	Serang		Klaten
	Padang		Purworejo
2008	Pati		Pemalang
	Bandung		Lamongan
	Bekasi		Kendal
	Demak		Probolinggo
	Ngawi		Banyuwangi
	Indramayu		Subang
	Bojonegoro		
	Karawang		
	Gresik		
	Kebumen		
Tegal			

During the field trip to Indramayu conducted in January 2010, the former director of the district government office (Mr. Kusnomo) expressed the need for technical assistance in the advanced training of CFS.

Indication of CY2009 Action 5:

- Complete a “Semi Dynamic Cropping Calendar Map” with long-term meteorological forecast in Sulawesi and Kalimantan

Semi-dynamic cropping calendar maps were made for Java and Sumatra during CY2007–2008, as planned. The maps are on the scale 1:250000, and use meteorological data from the Meteorology Agency (BMKG). Target actions and monitoring methodologies for CY2009 have been summarized in Table 2.3.10.

Table 2.3.10. Monitoring framework for CY2009 Action 5 in the Agriculture sector

Implementation steps	Evaluation indicators	Verification measures
The Indonesian Agroclimate and Hydrology Research Institute (IAHRI) will complete a ‘Semi Dynamic Cropping Calendar Map’ with a long-term meteorological forecast in Sulawesi and Kalimantan	Progress of the map-making in Sulawesi and Kalimantan	Collecting information from the IAHRI Collecting information from the DGFC and DGLWM of the MOA
In addition, the IAHRI, in collaboration with the DGFC and DGLWM of the MOA, needs to identify the challenges of introducing a cropping calendar and propose appropriate responses to overcoming these challenges	Strategies for improvement/expansion of map making	Collecting information from local researchers if available

(i) Analysis of progress/attainments

➤ **Status**

As of October 2009, the scheduled map-making in Sulawesi and Kalimantan has been completed. In Sulawesi, a total of six maps were made for eight provinces by combining North Sulawesi and Gorontalo in one atlas and West Sulawesi and Southeast Sulawesi in another.

The correct use of the map requires local users to be trained; additional budget is needed for providing CDs and computers to introduce the maps to these users. Dr. Eleonora Runtunuwu from the Indonesian Agroclimate and Hydrology Research Institute (IAHRI) of the MOA, in an interview that was conducted in October 2009, stated that trials were made to disseminate the maps in Java and Sumatra (where they were made) in 2007–2008, without much success. At the local level, the Dinas Pertanian (Office of Agriculture at the Provincial Level) and the BPTP (Balai Pengkajian Teknologi Pertanian, Indonesia Agency

for Agricultural Technology Research and Assessment at the Provincial Level⁸⁷) can play a role in disseminating the maps to their final users. The role of the BBP2TP (the national BPTP coordinator, located in Bogor) is to translate the maps into languages that farmers can understand and use. This task is beyond the responsibilities of the Indonesian Agroclimate and Hydrology Research Institute (IAHRI). The IAHRI, however, had conducted training for BPTP personnel from west Kalimantan, East Java, and Central Java in 2009 and is currently considering collaboration with BBP2PT for effective dissemination of the maps.

There has been very limited dissemination and utilization of the cropping calendar maps after they were developed for Java in CY2007 and Sumatra in CY2008. Although Climate Field Schools could incorporate these maps into their curricula, the module is still under development. The MOA is now considering developing comprehensive modules for the Climate Field School, as mentioned above. However, the lack of financial support for TOT at the provincial level (trained by the central government experts) and district level (trained by the provincial experts) is a major limitation, according to Dr. Eleonora Runtunuwu. Although effective implementation of cropping calendar training is necessary for nearly 40 personnel for two days for each province, it is not possible with the current budget.

Dr. Runtunuwu also stated that the expansion of calendar making for crops other than rice was not being considered because the current crop maps can be used for planning any other crops. Map making currently focuses on rice because it is the most grown crop in most parts of Indonesia and because it is grown in the first season.

During the follow-up interview in February 2010, Dr. Runtunuwu mentioned that the challenges faced by cropping calendar utilization were quality of weather forecast and the dissemination of necessary information to farmers.

An interview was conducted with Dr. Edwin Aldrian, Director of the Center for Climate Change and Air Quality, the Indonesia Agency for Meteorology and Climatology and Geography (BMKG) in February 2010. Dr. Aldrian stated that information flow from the BMKG to local farmers is not very efficient because the dissemination of information from the BMKG relies on local MOA offices and extension agents; neither the local offices nor the extension agents can always access the information and transmit it to farmers. Also, concerns were expressed over the quality of data obtained from local collaborators.

87 There are 31 in each province.

➤ **Obstacles/challenges**

The severest limitation has been the availability of data, both quantitative and qualitative. In addition, the density of observatories is poor; historical data for planting dates is not available; and administrative boundaries keep changing,⁸⁸ which makes consistent map-making difficult. Capacity-building of Bakosurtanal (the National Coordination Agency for Survey and Mapping) will help other agencies.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable (target completed).

➤ **For stable progress**

In 2010 and beyond, the IAHHI intends to continue map-making in the remaining regions (Papua, Maluku, Bali, and Nusa Tenggara Islands) and to produce more operational crop calendars at the village level for selected districts in Java (Pachitan in Java and Indramayu in West Java). The IAHHI also intends to upgrade the current semi-dynamic maps (which are based on three conditions—El Nino, La Nina, and normal) into dynamic maps that take other conditions into consideration. In addition, modules/materials need to be developed to teach farmers in Field Climate School how to use cropping maps; other appropriate venues also need to be developed in collaboration with the divisions in charge of extension services, such as the DGFC and the DGLWM of the MOA.

➤ **Needs assessment for technical assistance/Potential cooperation with GOJ/JICA**

According to the interview with Dr. Runtunuwu, there is no need for technical assistance.

According to the September 2009 (JICA 2009)⁸⁹ interview with the Directorate of Food and Agriculture of the Bappenas, however, technical assistance would be useful in expanding crops types for dynamic calendar map-making.

88 The Indonesia agency for survey has not been prompt enough to generate the latest cadastral and contour maps after each administrative change.

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2.4. Disaster Management and Disaster Risk Reduction Sector

2.4.1. Summary of Disaster Management and Disaster Risk Reduction sector

<Outline of Outcome and Indication of CY2009 Actions>

The disaster management and disaster risk reduction sector, which has been incorporated into the ICCPL framework from CY2009 onwards, sets three outcomes: (i) Organizational strengthening for disaster management, (ii) improving disaster management planning, implementation, and evaluation, and (iii) integrating natural disaster management, disaster risk reduction, and climate change adaptation. Five actions/targets have been planned for CY2009 to realize these outcomes.

Table 2.4.1. Progress and Recommendations in the Disaster Management and Disaster Risk reduction sector in CY2009

Anticipated outcome 1: - Organizational Strengthening for Disaster Management.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Institutional strengthening of the National Disaster Management Agency (BNPB).	Attained	<ul style="list-style-type: none"> - Steadily implement recruiting and training processes for new staff. - Continue recruiting/training staff. - (For beyond 2010) Design further plans for strengthening disaster management framework in reference to the UNDP study, to be published by the end of CY2009.
2	Establishment of Local Disaster Management Agency (BPBD) at selected disaster prone Regencies/Cities	Attained	<ul style="list-style-type: none"> - Continue recruiting/training staff. - (For beyond 2010) BPNB, MOHA, and MOF should cooperate to co-finance the establishment of BPBDs by the national and local governments. - (For beyond 2010) BPNB and MOHA should discuss further cooperation with foreign donors in continuous establishment and strengthening of BPBDs, particularly in two areas: a) financial support and b) training of staff.
Anticipated outcome 2: - Improving Disaster Management Planning, Implementation and Evaluation.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
3	Finalise National Disaster Management Plan.	Attained	<ul style="list-style-type: none"> - (For beyond 2010) BNPB and Bappenas to take measures to encourage/support local governments to prepare local disaster management plans.
4	Finalise National Action Plan for Disaster Risk Reduction (NAP-DRR 2010-2012).	Attained	<ul style="list-style-type: none"> - (For beyond 2010) BNPB and Bappenas to take measures to encourage/support local governments to prepare local action plans for disaster risk reduction.

Anticipated outcome 3: - Mainstreaming the integration of Natural Disaster Management, Disaster Risk Reduction and Climate Change adaptation.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
5	Mainstreaming disaster management and disaster risk reduction in the context of climate change adaptation, into the process of formulating the draft for next five year mid-term national development plan (2010-2014).	Attained	- Not applicable.

2.4.2. Background of policy actions/targets

(i) Overall Situation

Indonesia experiences various types of disasters due to its geographical conditions. In particular, floods and earthquakes are the most frequent.

Indonesia is often hit by earthquakes that are caused by tectonic plate movements and volcanic eruptions. Earthquakes can trigger tsunamis when they occur undersea. The huge earthquake that took place near Sumatra on 26 December, 2004 and that caused the massive tsunami that killed more than 160,000 people still is a vivid memory. Indonesia also often experiences hydro-meteorological disasters such as floods and landslides. Hydro-meteorological disasters account for 53.3% of total disasters in Indonesia in the period 2003–2005. In addition, Indonesia is expected to experience more hydro-meteorological disasters in the near future due to changes in the precipitation pattern caused by global warming.

Despite its vulnerability, Indonesia has undertaken the development of disaster management policies only very recently. The GOI's national development plans did not include specific actions for disaster management until the *Medium-term National Development Plan* (2004–2009) listed disaster risk management as a priority issue. After the spate of earthquakes, tsunamis, and landslides from 2004 onwards, the GOI issued the *National Action Plan for Disaster Reduction* in 2006 and enacted the *National Disaster Management Act* in 2007. The Action Plan and the Disaster Management Act list the major disaster threats in Indonesia and the priority areas of action for disaster risk management. BNPB was established in 2008 as a result of these acts. Local Disaster Management Agencies (BPBD) were also established in 18 provinces and 44 regencies. These agencies are expected to function as coordinating bodies for national and local agencies to prepare communities and people for the risk of natural disasters.

(ii) Priority Issues

As the institutional framework of disaster management/disaster risk reduction policy in Indonesia is in the early stages, the highest priority should be on strengthening national and local agencies. To this end, BNPB, along with Bappenas and the MOF, is expected to develop a financial scheme to support local governments in establishing BPDBs and recruiting and training the necessary personnel.

The National Action Plan for Disaster Reduction articulates five key issues:

1. ensuring that disaster risk reduction is a national and a local priority and that it has a

- strong institutional basis for implementation;
2. identifying, assessing, and monitoring disaster risks and enhancing early warning;
 3. using knowledge, innovation, and education to build a culture of safety and resilience at all levels;
 4. reducing underlying risk factors; and
 5. strengthening disaster preparedness for effective response at all levels.

These key issues are broken down into 63 specific actions such as creating and strengthening national integrated disaster risk reduction mechanisms, developing systems of indicators of disaster risk and vulnerability, developing training and learning programmes, and so on. Unfortunately, not all of these actions have been put into practice. However, it is expected that the development of disaster management policies will be accelerated during the next medium-term development plan (2010–2014) as this plan will focus on the integration of disaster management and climate change mitigation and the strengthening of disaster risk preparedness. The following actions are particularly relevant to ICCPL’s advisory and monitoring activities as they will contribute to the integration of disaster management and climate change mitigation.

Organizational development

BNPB is still in the process of organizational development and BPBDs have not yet been established in many provinces and regencies. Smooth procedures and initial actions for organizational development are necessary, such as capacity development of officers and information-sharing between BNPB and BPBDs.

Risk/vulnerability assessment and mapping

The mapping of disaster vulnerable areas had made little progress due to the lack of capacity and inconsistent perceptions of priority areas/sectors among related agencies such as KLH, BMKG, and BNPB. Prompt coordination between the agencies and the local governments is also necessary to facilitate mapping as disaster management and disaster risk reduction policies cannot become practical without adequate mapping of hazardous or vulnerable areas.

Early warning systems

In addition to meteorological early warning systems, the improvement of which is a target action in the ICCPL Policy Matrix, early warning systems for hydro-meteorological disasters and tsunamis can contribute significantly to reducing risk, particularly in coastal areas (Note: This action is included in cross-sectoral issues in the CCPL framework).

Future directions

In the medium term and the long term, GOI and the local government should take measures to involve more stakeholders in disaster management/risk reduction at the local level, such as schools, public and private hospitals, community organizations, and so on. BNPB included two targets in the draft disaster management plan, namely, integrating disaster management into formal and informal education and involving the community in risk reduction. However, the necessary actions for these targets are still in the planning stage. Technical cooperation with foreign donors should be sought in planning and implementing these actions because both national and local governments have insufficient personnel with expertise.

(iii) JICA's and other donor's existing and potential cooperation

Existing cooperation

JICA and the former-JBIC have supported disaster management and rehabilitation policies in Indonesia since 1970.

Additionally, many donor agencies and international organisations support GOI's disaster management and rehabilitation policies, particularly since the Earthquake in December 2004. Table 2.4.2. shows some examples of the projects supported by development partners including GOJ.

Table 2.4.2. Assistance Supported by Donors in the Disaster Management and Disaster Risk Reduction Sector

Donors	Disaster Risk Reduction in General	Specific to water related disasters
JICA/JBIC	<ul style="list-style-type: none"> ➤ Disaster Management / Disaster Rehabilitation sector program loan ➤ Urgent Disaster Reduction Project for Mt. Merapi / Progo River Basin and Mt. Bawakaraeng (2004) ➤ Disaster Management Planning Assessment (<u>Formation of Disaster Preparedness Programs in Indonesia 2007-09</u>) ➤ Integrated Disaster Mitigation Management for "Banjir Bandang" (2008-2011) 	<ul style="list-style-type: none"> ➤ Medan Flood Control Project (1998-) ➤ Project for Urgent Countermeasures for Sedimentation in Wonogiri Multipurpose Dam Reservoir (2003-2004) ➤ Lower Solo River Improvement Project (2004) ➤ Integrated Water Resources and Flood Management Project for Semarang (2005) ➤ Organizational strengthening for flood risk mitigation in the watershed of Jakarta metropolitan area (2007-2010)
UNDP	<ul style="list-style-type: none"> ➤ (TA) Safer Community through Disaster Risk Reduction in Development (SC-DRR) 	
WB	<ul style="list-style-type: none"> ➤ (TA) Global Facility for Disaster Reduction and Recovery (GFDRR) 	<ul style="list-style-type: none"> ➤ Dam Operation in Safety Project ➤ Jakarta Urgent Flood Mitigation Project
ADB		<ul style="list-style-type: none"> ➤ Integrated Citarum Water Resources Management ➤ Flood Management in Selected River Basin

Potential cooperation

Besides the existing cooperation programmes/projects listed above, GOJ and JICA could further cooperate to GOI's and the local governments' efforts to improve their disaster preparedness through technical assistance to BNPB/BPBDs, particularly in the following issues:

- a) planning of disaster management/disaster risk reduction;
- b) risk/vulnerability assessment; and
- c) emergency responses such as early warning, evacuation drills, and so on.

2.4.3. Analysis of progress and recommendations

Anticipated Outcome 1:

Organizational Strengthening for Disaster Management

Indication of CY2009 Action 1:

- **Institutional strengthening of the National Disaster Management Agency (BNPB).**

The National Disaster Management Agency (BNPB) was established in 2008 as the main implementer of disaster management at the national level. Government Regulation 24/2007 regulates the main tasks of BNPB as:

- a) the formulation and definition of disaster management and refugee handling policies; and
- b) the coordination of stakeholders in order to realize planned, integrated, and comprehensive disaster management operation.

To this end, instead of independently carrying out disaster management policies, BNPB has to cooperate with ministries, agencies, and other related institutions to ensure these policies are implemented. In its tasks related to climate change, BNPB cooperates with the following bodies:

- Bakosurtanal on the mapping of disaster sensitive areas;
- the Research and Technology Agency (BPPT), the National Institute of Science (LIPI), and BMKG on the establishment of an early warning system;
- PU on the reduction of flood risk;
- MEMR on landslide prevention;
- the National Education Department on education on disaster management and reduction of disaster risk;
- the Ministry of Home Affairs (MOHA) on community involvement in disaster management and disaster risk control; and
- KLH on overall policies on climate-related disasters.

BNPB has faced two serious problems in the early stages of its establishment, namely, lack of human resources and space. As of October 2009, the aforementioned tasks mandated to BNPB have been carried out by approximately 130 staff members, only one third of which are necessary personnel. In addition, its working space has been spread over two areas in Jakarta and is not enough to accommodate all the necessary staff.

(i) **Analysis of progress/attainments**

Table 2.4.3. Monitoring framework for CY2009 Action 1 in the Disaster Management and Disaster Risk Reduction sector

Implementation steps	Evaluation indicators	Verification measures
Combat weaknesses in existent institutions for disaster management	Finalized organization plan	Collecting information from Bappenas and BNPB
Draft organization plan	Numbers/percentages of assigning directors/managers	Documents to review: <ul style="list-style-type: none">• BNPB organization plan
Approval of organization plan by the cabinet	Numbers/percentages of completion of recruiting/assigning staff	
Allocation of budget for recruiting staff		
Recruitment/assignment of directors/managers		
Recruitment/assignment of staff under directors		

➤ **Status**

BNPB completed the assignment of directors/managers at all levels by October 2009. In order to secure staff under the directors/managers, BNPB requested the Minister of State Apparatus Empowerment (Menpan) for approval to recruit about 300 people. Menpan, however, approved the recruitment of up to 118 new personnel in 2009.

In October 2009, BNPB launched the process of selecting 118 personnel from among new Master's course, Bachelor's course, and high school graduates. On 19 November, 2009 BNPB recruited 116 persons on a probation basis. This was two less than originally planned because two candidates did not have the required level of education.

The new staff consisted of 63 people for S1, 23 for D3, and 30 from high school. Since recruitment, administrative arrangements have been made and Parent Employee Number (Nomor Induk Pegawai, NIP) at the State Personnel Agency (Badan Kepegawaian Negara, BKN) has been officially assigned (since 1 February, 2010).

➤ **Obstacles/challenges**

Although the recruitment process has been completed, it is expected that the new staff will need some time to get accustomed to their tasks as all of them are fresh graduates. Additionally, BNPB still lacks human resources in disaster control, geology, geography, administration, and law. To remedy this situation, it has proposed a continuous recruitment budget to BKN and MOF.

In addition to the human resource problem, BNPB also faces a serious shortage of working space. It has also been requesting the MOF for budget for relocation, but this has not yet been approved.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

- Continue recruiting/training staff.
- Design further plans for strengthening the disaster management framework in reference to the UNDP study report *Lessons Learned: Disaster Management Legal reform The Indonesian Experience*⁹⁰ that was published at the end of CY2009.

90 UNDP Indonesia 2009. Downloadable at http://www.undp.or.id/pubs/undp_ind.asp (checked as of February 2010).

Indication of CY2009 Action 2:

- **Establishment of Local Disaster Management Agency (BPBD) at selected disaster prone Regencies/ Cities**

One of BNPB's priority tasks is to design an institutional framework of disaster management/risk reduction at the local level. The legal framework for establishing BPBDs has been set by two regulations, namely, Regulation of BNPB 3/2008 on the Establishment of Guidelines and the Regulation of MOHA 46/2008 Defining the Local Governments' Obligations and Procedures to Establish BPBDs.

All provinces are obliged to establish BPBDs, while regencies/cities are recommended to do so from CY2009 onwards. BPBDs are expected to function as planning and coordinating bodies on disaster management/disaster risk reduction policies at the local level.

(i) Analysis of progress/attainments

Table 2.4.4. Monitoring framework for CY2009 Action 2 in the Disaster Management and Disaster Risk Reduction sector

Implementation steps	Evaluation indicators	Verification measures
Prioritization of disaster prone provinces/districts	Number of BPDBs established/being prepared	Collecting information from BNPB and MOHA
Draft establishment plans of BPDBs in the prioritized areas.	Percentage of directors/managers assigned	Collecting information from selected BPDBs
Issuing local government decrees on establishing BPDBs	Percentage of staff recruited	Documents to review: <ul style="list-style-type: none">• Report on the analysis of prioritized areas• BPDBs establishment plans
Allocating budget for recruiting staff/settling the offices		
Recruitment/assignment of directors/managers		
Recruitment/assignment of staff under directors		

➤ **Status**

As of December 2009, 18 provinces out of 33 have established BPBDs and 4 provinces have drafted provincial regulations on the establishment of BPBDs.

At the regency/city level, 45 regencies/cities out of about 490 have already established BPBDs and 16 have had their regency/city regulation on BPBD delivered in Congress.

This means that only two-thirds of provinces and one-tenth of districts/regencies have BPBDs. In addition, none of the BPBDs have yet finished their assignment of directors, managers, and staff.

With regard to the urgency of having BPBDs, currently neither BNPB nor MOHA has control over local governments in disaster vulnerability areas. However, most BPBDs that are either established or are in the process of establishment are located in the high risk areas identified by BNPB in its Draft Indeks Kerawanan Bencana di Indonesia (Draft Disaster Vulnerability Index in Indonesia)⁹¹.

Table 2.4.5. BPBDs established at the Provincial Level by December 2009

1	BPBD Jawa Tengah Province
2	BPBD Sulawesi Utara Province
3	BPBD Nusa Tenggara Timur Province
4	BPBD Bengkulu Province
5	BPBD Kalimantan Timur Province
6	BPBD Sulawesi Tenggara Province
7	BPBD Nusa Tenggara Barat Province
8	BPBD Sulawesi Tengah Province
9	BPBD Maluku Province
10	BPBD Jawa Timur Province
11	BPBD Jambi Province
12	BPBD Kalimantan Barat Province
13	BPBD Bali Province
14	BPBD Sumatera Utara Province
15	BPBD Sulawesi Barat Province
16	BPBD Bangka Belitung Province
17	BPBD Kalimantan Selatan Province
18	BPBD Nanggröe Aceh Darussalam

Table 2.4.6. BPBDs in the process of establishment at the Provincial Level as of December 2009

1	BPBD Sumatera Barat Province
2	BPBD Lampung Province
3	BPBD Sumatera Selatan Province
4	BPBD Maluku Utara Province

91 BNPB 2009. Indeks Kerawanan Bencana di Indonesia (Draft Disaster Vulnerability Index in Indonesia).

Table 2.4.7. BPBDs established at Regency/City Level by December 2009

1	BPBD Cilacap Regency
2	BPBD Sangihe Regency
3	BPBD Minahasa Selatan Regency
4	BPBD Kota Kupang City
5	BPBD Kota Bengkulu City
6	BPBD Muko-Muko Regency
7	BPBD Kota Samarinda City
8	BPBD Keerom Regency
9	BPBD Bojonegoro Regency
10	BPBD Lampung Barat Regency
11	BPBD Kota Denpasar City
12	BPBD Kota Palu City
13	BPBD Aceh Besar Regency
14	BPBD Asahan Regency
15	BPBD Samosir Regency
16	BPBD Pesisir Selatan Regency
17	BPBD Kepulauan Mentawai Regency
18	BPBD Kota Padang City
19	BPBD Kota Bandar Lampung City
20	BPBD Kudus Regency
21	BPBD Lamongan Regency
22	BPBD Kota Singkawang City
23	BPBD Minahasa Selatan Regency
24	BPBD Minahasa Tenggara Regency
25	BPBD Tomohon Regency
26	BPBD Kota Bitung City
27	BPBD Kota Palu City
28	BPBD Konawe Regency
29	BPBD Kota Gianyar City
30	BPBD Kota Bima City
31	BPBD Manggarai Regency
32	BPBD Sikka Regency
33	BPBD Lembata Regency
34	BPBD Kota Tual City
35	BPBD Seluma Regency
36	BPBD Konawe Selatan Regency
37	BPBD Bengkulu Tengah Regency
38	BPBD Sorong Regency
39	BPBD Pontianak Regency
40	BPBD Ketapang Regency
41	BPBD Pidie Jaya Regency
42	BPBD Bolaang Mongondow Timur Regency
43	BPBD Mamasa Regency
44	BPBD Agam Regency
45	BPBD Ogan Komering Ulu Selatan Regency

**Table 2.4.8. BPBDs in the process of establishment at the Regency/
City Level as of December 2009**

1	BPBD Timur Tengah Selatan Regency
2	BPBD Nias Regency
3	BPBD Mandailing Natal Regency
4	BPBD Kota Gunung Sitoli
5	BPBD Solok Regency
6	BPBD Kota Pagar Alam
7	BPBD Bengkulu Utara Regency
8	BPBD Tulang Bawang Regency
9	BPBD Lampung Selatan Regency
10	BPBD Ciamis Regency
11	BPBD Bantul Regency
12	BPBD Kota Probolinggo
13	BPBD Kota Manado
14	BPBD Minahasa Utara Regency
15	BPBD Bulukumba Regency
16	BPBD Tapanuli Tengah Regency

➤ **Obstacles/challenges**

In the decentralised administration of the Republic of Indonesia, local governments set issues in their own order of priority. No exception to this has been made for disaster management. BNPB is not in the position to order local governments to establish BPBDs, but can support them in doing so. In the view of BNPB directors, many local governments place a low priority on the establishment of BPBDs because they do not fully understand the urgent need for disaster risk reduction.

One of the obstacles to the speedy establishment of BPBDs is funding resources. Currently, BPBDs are established and operated only through the budgets of local governments. BNPB has considered a co-financing scheme with the national government to establish BPBDs, but this scheme is not expected to be launched soon.

Even established BPBDs have a mountain of issues related to the functional operations of disaster management/disaster risk reduction policies. Human resource development is the most urgent among these issues. As noted above, none of the BPBDs have finished the assignment of directors, managers, and staff. Moreover, BPBDs officers do not have enough expertise on disaster management/disaster risk reduction policies. This is because BPBDs mainly employ fresh graduates and not experienced officers from other agencies because most of these officers do not have enough experience of disaster management/disaster risk reduction policies and have not been aware of their necessity for

these policies until quite recently.

BNPB provides staff training for BPBDs to delegates from all BPBDs. However, only two provinces—North Sulawesi and Central Java—have finished the course so far. BNPB also sends trainers to directly train local officers; this scheme has been implemented only in a limited number of BPBDs, however, as BNPB also suffers from lack of personnel.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Continue recruiting/training staff.

➤ **Recommendations for beyond 2010**

BNPB, MOHA, and MOF should cooperate to launch the co-financing of BPBDs by the national and local governments.

BNPB and MOHA should discuss further cooperation on the continuous establishment and strengthening of BPBDs with foreign donors, particularly in two areas: a) financial support and b) the training of staff.

(BNPB submitted a request to JICA for technical assistance in strengthening the capacity of BNPB and BPBD. This assistance is planned to commence from 2010 onwards.

As of October 2009, AusAID has agreed to provide technical assistance to train BPBD staff.)

Anticipated Outcome 2:**Improving Disaster Management Planning, Implementation and Evaluation****Indication of CY2009 Action 3:**

- **Finalize National Disaster Management Plan.**

The Government Regulation 24/2007 on Disaster Management, which defined the role of BNPB, also demanded that the GOI prepare a National Disaster Management Plan. This plan formulates strategies, programmes, and activities with a view to developing the capacity of the government and the private sector in a) minimising disaster risks and b) promoting disaster-preparedness.

BNPB is in charge of drafting and issuing the National Disaster Management Plan. This plan is to be referred to as the master document for action plans such as the National Action Plan for Disaster Risk Reduction (NAP-DRR) and the disaster management plans of local governments.

The National Disaster Management Plan is based on JICA's study on disaster management policy development and is financially supported by UNDP, GTZ, and WB.

(i) Analysis of progress/attainments

Table 2.4.9. Monitoring framework for CY2009 Action 3 in the Disaster Management and Disaster Risk Reduction sector

Implementation steps	Evaluation indicators	Verification measures
Organizing a project team to create the National Disaster Management Plan	Progress/results of stakeholder consultations	Collecting information from BNPB
Drafting the National Disaster Management Plan	Issued decree on National Disaster Management Plan	Documents to review: <ul style="list-style-type: none"> • Draft National Disaster Management Plan • Report on the stakeholder consultation meetings (if possible) • Issued decree
Rounds of stakeholder consultations		
Revisions to reflect consultations		
Review by BPDB Bureau of Legal and Organization		
Endorsement by the Director of National Disaster Management		

➤ **Status**

The National Disaster Management Plan was formulated through a series of workshops with BNPB and related government agencies based on the general principles and policies discussed with and agreed on by BNPB. To be more precise, the JICA Study Team introduced and explained Japan's Disaster Management Plan to BNPB. The characteristics of Indonesia that differ from those of Japan were incorporated during the drafting process.

The draft was prepared by BNPB's project team and was presented at the national platform meeting on 31 August, 2009.

The National Disaster Management Plan needs flexibility that enables relevant government agencies to incorporate unique missions and mandates for their disaster management efforts because they would find it difficult to stipulate these missions and mandates in the National Plan. To this end, the draft was sent to 15 agencies (MOFR, PU, MOA, etc.) for feedback, to be returned by October. Bappenas discussed the plan most closely with BNPB to ensure the plan's linkage with the next five-year development plan.

BNPB continued its finalization of the draft in response to feedback from agencies until the end of December 2009.

The formulated National Disaster Management Plan is composed of three parts, listed below:

Part 1: General (Objectives and structure of the Plan, Basic Strategy, and Background)

Part 2: Earthquake Disaster Measures (activities and the organizations responsible for them in each disaster phase, i.e. Pre-disaster, Emergency Response, and Post-disaster)

Part 3: Rain and Storm Disaster Measures (activities and the organizations responsible for them in each disaster phase, i.e. Pre-disaster, Emergency Response, and Post-disaster)

This is to be followed by the Regional Disaster Management Plans that have been in the process of preparation in some pilot regions. This structure will facilitate comparison, reference, and coordination between national and regional plans.

The National Disaster Management Plan is supposed to be reviewed once in five years and when a big disaster occurs.

➤ **Obstacles/challenges**

No obstacles/challenges have been identified as of October 2009.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

BNPB and Bappenas take measures to encourage/support local governments in preparing regional disaster management plans based on the national disaster management plan.

Indication of CY2009 Action 4:

- **Finalize National Action Plan for Disaster Risk Reduction (NAP-DRR 2010-2012).**

In 2006, Bappenas and the National Coordination Body for Disaster Management (Bakornas PB, the predecessor of BNPB) issued the first National Action Plan for Disaster Risk Reduction (NAP-DRR). It was prepared as a commitment by the GOI to UNESCAP Resolution 63/1999, which requested governments to create the NAP-DRR, the Hyogo Framework for Action (2005–2015), and an integrated disaster risk reduction mechanism.

NAP-DRR 2006 listed the overall disaster situation in Indonesia, the international platforms for disaster risk reduction to which GOI commits, and the GOI's action plan for CY2006–CY2009 (including mechanism, institutional arrangement, and funding).

The GOI has been aware of the need to enrich the NAP-DRR 2006 and has prepared a revised version. The revised version was drafted by BNPB in consultation with various stakeholders, including 19 government agencies, the local governments, and foreign donors.

The National Action Plan for Disaster Risk Reduction (Renas/NAP – DRR 2010–2012) is a cross-sector government plan that is valid for five years (2010–2014). A summary of NAP-DRR content will be integrated into the National Medium Term Development Plan (RPJMN), which includes government policies and programmes as well as the central government's work plan.

Ministries/agencies of the Indonesian government will develop a strategic plan for Disaster Management based on NAP-DRR and will implement it from 2010 through their work plan.

Provincial and district governments also refer to the new NAP-DRR to formulate their own action plans for disaster management.

(i) **Analysis of progress/attainments**

Table 2.4.10. Monitoring framework for CY2009 Action 4 in the Disaster Management and Disaster Risk Reduction sector

Implementation steps	Evaluation indicators	Verification measures
Organizing a project team for producing the National Action Plan for Disaster Risk Reduction (NAP-DRR)	Progress/results of stakeholder consultations	Collecting information from BNPB and Bappenas
Drafting the NAP-DRR	Draft/Finalized NAP-DRR	Documents to review: <ul style="list-style-type: none">• Draft NAP-DRR• Report on the stakeholder consultation meetings (if possible)• Finalized NAP-DRR
Rounds of stakeholder consultations		
Revisions to reflect consultations		
Endorsement by the Director of National Disaster Management		

➤ **Status**

BNPB has developed an interim draft of NAP-DRR in consultation with stakeholders through:

1. public consultation meetings (held in six cities such as Kupang, Surabaya, Palembang, and Medang as of October 2009); and
2. stakeholder consultations with government agencies, local governments, and foreign donors.

Bappenas finalized the NAP-DRR draft, which reflects stakeholders' feedback, by the end of CY2009. It is scheduled to be issued on 19 March, 2010.

➤ **Obstacles/challenges**

No obstacles/challenges are identified as of October 2009.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable. The target is likely to be attained.

➤ **Recommendations for beyond 2010**

BNPB and Bappenas take measures based on NAP-DRR to encourage/support local governments in the preparation of local action plans for disaster risk reduction.

Anticipated Outcome 3:**Mainstreaming the integration of Natural Disaster Management, Disaster Risk Reduction and Climate Change adaptation****Indication of CY2009 Action 5:**

- **Mainstreaming disaster management and disaster risk reduction in the context of climate change adaptation, into the process of formulating the draft for next five year mid-term national development plan (2010-2014).**

Following the immense damage caused by the earthquake and tsunami that hit North Sumatera in December 2004, GOI is aware of the urgent need to develop capacity for disaster management/disaster risk reduction. Disaster management/risk reduction was included in the CY2007 government action plan (RKP) as one of the nine priority issues.

Disaster management/risk reduction is also included in the current Medium Term Development Plan (CY2010–2014).

(i) Analysis of progress/attainments

Table 2.4.11. Monitoring framework for CY2009 Action 5 in the Disaster Management and Disaster Risk Reduction sector

Implementation steps	Evaluation indicators	Verification measures
Organizing a project team for drafting the chapter/section on disaster management/disaster risk reduction in the five-year development plan	Draft chapter/section on disaster management/disaster risk reduction in the five-year development plan	Collecting information from BNPB and Bappenas
Draft the chapter/section on disaster management/disaster risk reduction in the five-year development plan	Progress/results of stakeholder consultations	Documents to review: <ul style="list-style-type: none"> • Draft chapter/section on disaster management/disaster risk reduction in the five-year development plan
Rounds of stakeholder consultations	Draft submitted to Bappenas	<ul style="list-style-type: none"> • Report on the stakeholder consultation meetings (if possible)
Revisions to reflect consultations	Finalized five-year national development plans	<ul style="list-style-type: none"> • Finalized five-year national development plan
Submitting the draft to Bappenas		
Consultations with Bappenas and other relevant ministries (BMKG, MOHA)		

➤ **Status**

In the RPJMN, disaster management/risk reduction policies are included in two chapters:

1. Chapter XI, 'Regional Development and Spatial Plan', stating disaster risk reduction; and
2. Chapter X, 'Natural Resources Management and Environment', stating disaster management particularly related to climate change.

The draft RPJMN was discussed during the Cabinet Meeting in the last week of October and was presented at the Public Consultation Meeting in the third week of December.

After the final revision process, Bappenas issued RPJMN 2010–2014 on 5 February, 2010. Statements on conditions/estimated impacts/necessary responses related to disaster management and disaster risk reduction have been included in the issued RPJMN as planned:

1. Book II, Ch. IX, Section 9.3.10 Disaster and Disaster Risk Reduction;
2. Book II, Ch. X, Section 10.1.7 Climate and Natural Disasters and Capacity Adaptation and Mitigation of Climate Change;
3. Book II, Ch. X, Section 10.2.1.7. Climate and Disasters Nature and Adaptation and Mitigation Capacity Climate Change;
4. Book II, Ch. X, Section 10.2.2.7. Climate and Disasters Nature and Adaptation and Mitigation Capacity Climate Change; and
5. Book II, Ch. X, Section 10.3.7. Climate and Natural Disasters and Capacity Adaptation and Mitigation of Climate Change.

➤ **Obstacles/challenges**

No obstacles/challenges are identified.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

2.5. Marine, Coastal and Fisheries Sector

2.5.1. Summary of Marine, Coastal and Fisheries Sector

<Outline of Outcome and Indication of CY2009 Actions>

The anticipated outcome from the Marine and Fisheries sector is the strengthening of the institutional and regulating framework to manage coastal zones and small islands. There are five specific actions to be achieved under the ICCPL Policy Matrix, the progress of which has been summarized in Table 2.5.1.

**Table 2.5.1. Progress in the Marine and Fisheries Sector
in CY2009 and Recommendations**

Anticipated outcome:			
- Strengthening of institutional and regulating framework to manage coastal zones and small Island.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Launch the Indonesian National Plan of Actions (NPOA) of Coral Triangle Initiatives on Coral reef, fisheries and food security (CTI-CFF) and improve detailed NPOA	Attained	<ul style="list-style-type: none"> - Indonesian National Plan of Actions (NPOA) is already launched and is being smoothly implemented - The working group priority activities for Year 2010 in Indonesia have been decided - The geographic priority areas (Eco-region) for conservation of marine biodiversity in Indonesia have been designated
2	Finalise the draft of Government Regulation on Disaster Mitigation and Coastal Damage	Attained	<ul style="list-style-type: none"> - The draft Government Regulation on Disaster Mitigation and Coastal Damage was finalized and sent to the State Secretariat - It was to be signed by the President and recorded in the State Gazette
3	Manage and Rehabilitate coral reef in 15 districts within 8 provinces (COREMAP)	Attained	<ul style="list-style-type: none"> - In order to socialize coral reef management, continuous efforts of study, planning, and programme implementation with increased participation of local communities is necessary

4	Conduct Mapping Priority areas for rehabilitation and utilization in marine and coastal areas, and conduct mangrove rehabilitation management	Attained	<ul style="list-style-type: none"> - Mapping Priority areas in Java for rehabilitation and utilization in marine and coastal areas in 2009 was completed - Mangrove rehabilitation was already conducted in 6 out of 12 municipalities (expansion about 110 ha, planting 53,500 mangroves)
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
5	Conduct study for ocean carbon, and marine and coastal vulnerability to sea level rise	Attained	<ul style="list-style-type: none"> - United States and China joined ocean carbon research activity and now provide technical support

2.5.2. Background of the policy actions/targets

(i) Overall Situation

The Republic of Indonesia is the largest archipelagic state in the world, consisting of five major islands and about 30 smaller groups of islands, totalling 17,500 islands. Indonesia has 3.1 million km² of sea and about 2 million km² of land area, with a shoreline length of 81,000 km. If the Exclusive Economic Zone with an area of 2.7 million km² is included, then the total jurisdiction of Indonesia will be up to 7.8 million km².

Owing to these geographical/topological conditions, Indonesia is expected to be severely hit by climate change. Sea level rise caused by global warming rises measures 8 mm per year in some parts of Indonesia, threatening coastal areas and the inhabitants of these areas (KLH 2007)⁹². Moreover, Indonesia has lost 24 small islands in just two years (2005–2007), according to the Department of Marine Affairs and Fisheries. In addition, increase of sea surface temperature, particularly during the 1997 El Niño, has caused serious problems to coral reef ecosystems; this destroyed about 18% of the coral reef ecosystem in Southeast Asia. Coral bleaching has also occurred in many places, such as East Sumatra, Java, Bali, and Lombok. In the Seribu Islands, about 90–95% of coral reefs at a depth of 25 m have experienced coral bleaching; most of these islands have been lost because of erosion, which has been worsened by commercial mining activity.

(ii) Priority Issues

Indonesia's coastal areas possess quite a large potential for development because of ecosystems such as coral reefs, mangrove forests, seagrass meadows, and so on, which have high biological productivity. However, these ecosystems are threatened by the impacts of climate change, such as inundation of cultured fisheries areas, loss of economic assets and infrastructure, increased erosion, and damage to coastal biodiversity, small islands, and cultured sites in coastal areas.

The MMAF has carried out various regional development actions to increase the resilience of coastal communities and the fisheries sector to the impacts of climate change, mainly through the development of social and economic conditions in coastal areas. For instance, MMAF aims to triple aquacultural production by 2014.

MMAF set up a series of programmes for 'Sustainable and Responsible Management of Marine and Fisheries Resource for Unity and Welfare of the Indonesian Citizen'. These programmes

92 KLH 2007. National Action Plan Addressing Climate Change 2007.

have several specific objectives, such as:

1. Improving the welfare of fisherman communities, fish culture farmers, and other coastal communities;
2. increasing the role of the marine and fisheries sector as a source of economic growth;
3. maintaining and increasing the carrying capacity and the environment quality of freshwater areas, coastal areas, small islands, and seas;
4. improving the intelligence and health of people through the increase of fish consumption; and
5. increasing the role of Indonesian seas as nation unifiers and increasing Indonesia's marine culture (KLH 2007)⁹³.

These objectives will ideally be fulfilled through the active involvement of communities and local governments in necessary steps such as planning; allocation and utilization of resources; implementation; maintenance; and evaluation.

The GOI pursues this vision together with five other countries, namely, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste. These six countries have been preparing an international programme called the Coral Triangle Initiative. One of the main objectives of this programme is climate change mitigation and adaptation at the regional level through the conservation and preservation of the 75,000 km² of coral reef between the six countries (CT-6). In line with this programme, the GOI has developed its National Action Plan of Coral Triangle Initiative on coral reef, fisheries and food security (CTI-CFF) and COREMAP.

Apart from the aforementioned adaptation measures, the carbon absorption capacity of marine and coral areas draws attention. MMAF has taken several approaches in the study towards the improvement of the carbon absorption capacity of coastal areas and small islands, the functions of which are beneficial for climate change. More specifically, MMAF has tried: 1) Mangrove and coastal vegetation planting with community involvement, 2) coral reef rehabilitation through transplantation and artificial coral reefs, and 3) expansion of marine protection areas (MPA), targeting 20 million ha in 2020.

(iii) JICA's and other donor's existing/potential cooperation

Existing cooperation

The overview of development assistance activities on CTI, COREMAP and marine research of donors in the sector is summarized in Table 2.5.11.

93 KLH 2007. National Action Plan Addressing Climate Change 2007.

Table 2.5.2. Assistance Supported by Donors in the Marine, Coral and Fisheries Sector

Donors	Marine conservation	Marine research	Planning / Advisory
Japan			➤ Dispatch of expert on fisheries planning in MMAF
World Bank	➤ CTI ➤ COREMAP		
ADB	➤ CTI ➤ COREMAP		
GEF	➤ CTI ➤ COREMAP ➤ Fisheries resource management		
FAO	➤ Fisheries resource management		
United State	➤ CTI	➤ Assistance of Marine research on CO ₂ and resources	
Australia (AusAid)	➤ CTI	➤ Assistance of Marine research and oceanographic survey	
China		➤ Assistance of Marine research on CO ₂ and resources	

Potential cooperation

GOJ and JICA could cooperate with the GOI by financially or technically supporting MMAF's activities related to:

- 1) Aquaculture development to achieve the target of tripling production by 2014.

In particular, aquaculture development in Eastern Indonesia (such as Bali and Lombok) has room for cooperation. JICA/GOJ could contribute to socio-economic development or could help disseminate aquaculture technologies to making regions and communities more resilient to the impacts of climate change.

- 2) Study of aquaculture production potential in entire regions of Indonesia.

GOJ/JICA could also cooperate with MMAF in studies on aquaculture production potential. Research institutes such as TIU (Technical Implementation Units for fisheries production) in eastern Indonesia (Lombok, Takalar, and Ambon) and GRIM (Gondol Research Institute for Mariculture) in Bali are potential focal points.

Further recommendations on potential cooperation can be found in Section 2.5.4., 'Other recommendations related to Marine, Coastal and Fisheries Sector'.

2.5.3. Analysis of progress and recommendations

Anticipated Outcome 1:

Strengthening of institutional and regulating framework to manage coastal zones and small Islands

Indication of CY2009 Action 1:

- **Launch the Indonesian National Plan of Actions (NPOA) of Coral Triangle Initiatives on Coral reef, fisheries and food security (CTI-CFF) and improve detailed NPOA**

(i) Analysis of progress/attainments

Table 2.5.3. Monitoring framework for CY2009 Action 1 in the Marine, Coastal and Fisheries sector

Implementation steps	Evaluation indicators	Verification measures
Identifying demarcations between related organizations and committees	Draft of 'Priority seascape' designated	Collecting information from MMAF
Identifying national priorities for implementation of the CTI-CFF plan	Number of fisheries management areas	Documents to review: • Draft of Regional plan of action of Coral Triangle Initiatives on Coral reef, fisheries and food security (CTI-CFF)
Designing framework for support and coordination	Number of seminar or workshop	
Securing budget	Number of the directors/managers assigned	
Conducting study on developing and updating CTI-CFF plan of action		

➤ **Status**

According to Indonesia National Plan of Actions of CTI-CFF in 2009, the Indonesian National Secretariat for the Coral Triangle Initiative (NSCTI) was established with seven Working Groups: Priority Seascapes Designation; Ecosystem Approach to Management of Fisheries and Other Marine Resources; Establishment of Marine Protected Areas; Climate Change Adaptation; Threatened Species protection; Monitoring and Evaluation; and Capacity-building. The members of these Working Groups are from other ministries, i.e. MOFR, MOHA, KLH, and LIPI.

The draft NPOA for Indonesia was finalized and approved by the six member countries; the roadmap of actions during 2010–11 was approved in November 2009.

At the national level, broad stakeholder alliances are required to collaborate around a

shared national agenda. At the sub-national level, local governments and local stakeholders will carry out collaborative efforts to generate the necessary impacts on the ground. A set of coordination mechanisms are being established to help catalyze this collective action, connect key actors, and maintain momentum. The actions stated in the NPOA are expected to result in tangible and measurable improvements in the health of marine and coastal ecosystems, the status of fisheries, and food security. Comprehensive monitoring and evaluation (M&E) programmes will be carried out over the next decade.

Other donors' actions;

Technical and financial support of the CTI programme has recently increased. The ADB has committed to organizing international technical and financial support for the conservation of the Coral Triangle. Supporting donors and partners of the CTI programme include the governments of Australia and the U.S., the World Wide Fund for Nature, the Nature Conservancy, Conservation International, UN agencies, and the World Bank.

As of the last CTI summit in May 2009, commitments and pledges of financial support have exceeded USD 350 million, including up to USD 63 million in grants from the Global Environment Facility.

In 2009, the following CTI actions were implemented:

Priority areas (eco region) for conservation of marine biodiversity in Indonesia were designated as: 1) Papua, 2) Banda Sea, 3) Nusa Tenggara, 4) Sulawesi Sea/Makassar Strait, 5) Halmahera, 6) Palawan/Northern Borneo, 7) Western Sumatra, 8) Eastern Sulawesi Sea/Tomini Bay, 9) Paparan Sunda, 10) Arafura Sea, 11) Southern Java, and 12) Malacca Strait.

In these priority areas, the GOI plans to conduct scientific studies on:

- Management and governance for streamlining fisheries management areas (WPP) with the seascape approach for 'Priority Seascapes Designated and Effectively Managed' by CTI by CY2009;
- Identification and delineation of three new seascapes in Indonesia such as Sunda-Banda seascape and Savu seascape (to be finalized by CY2010); and
- Identification and delineation of seascapes with potential trans-boundary issues (to be finalized by CY2010).

About USD 115 million of direct external grant assistance has been committed by donor

agencies to support various aspects of CTI implementation, primarily by USAID and ADB/GEF. In addition, about USD 14 million of national funding commitments were announced by CT6 leaders at the CTI Summit. Early financial commitments may invoke much larger fund mobilization that contributes to regional and national CTI plans of action. At the same time, sufficient capacity-building of the six CTI countries needs to be done to facilitate the absorption/efficient disbursement of large-scale funding (Fourth Senior Official Meeting, SOM4 on 21 October, 2009).

CTI-CFF's contributions to climate change adaptation were discussed in SOM4 and in SOM5 on 18 November, 2009 and were agreed as being:

- To support the inclusion of ocean dimensions and issues into the UNFCCC negotiation text;
- To enhance the understanding and capacities of the CT6 countries for the implementation of the RPOA and NPOA for climate change adaptation.

To this end, relevant ministers should have a Joint Communiqué at the OCEAN DAY in Copenhagen with regard to CTI RPOA as an implementation instrument for Climate Change Adaptation. A detailed draft of the Joint Communiqué on Climate Change was developed at SOM5.

Domestic CTI strategy in 2010

Priority actions for Indonesia in 2010 were decided based on SOM4 and SOM5. MMAF is obliged to implement the following activities;

- Designation and effective management of Priority Seascapes.
 - Plan formulation for seascapes in Papua and Anambas.
 - Facilitation of marine spatial management cooperation in Tomini Bay.
 - Regional development cooperation in the fisheries area of Karimata Strait.
 - Development of spatial database for priority seascape.
- Application of Ecosystem Approach to Management of Fisheries (EAFM) and other marine resources.
 - Develop management fisheries plan in Fisheries Management Area; South China Sea, Karimata strait, Natuna, and Arafura Sea.
 - Implementation of fishing logbook activities.
 - Establish Ship Registration in Regional Fisheries Management Organization (REMO).
 - Regulate type and size of catchable fishes.

- Development of certification scheme, process of capture, and aquaculture fisheries products.
- Management of Marine Protected Areas (MPAs).
 - Decision of water conservation areas.
 - Implementation of economy valuation research in these conservation areas.
 - Finalization of general guidance and Minister's Regulation.
 - Capacity-building and management plan at the national and the district level.
- Improve status of threatened species.
 - Capacity-building and setting up of new management authority.
 - Development of turtle conservation management; pilot project at Pangumbahan and Berau sites.

CTI aims to support the adaptability of ecosystems to climate change and to implement MPA and fisheries resource management. CTI will do this by focusing on sustainable economic development, food security, and marine resource conservation.

The following current activities are related to the CTI programme:

- Strengthening marine and coastal resource management in the Coral Triangle, commenced in March 2009
- Strengthening strategies for fisheries management, a regional project by FAO, and the GEF Work Program in April 2009
- Strengthening the network of MPAs to help the marine ecosystem adapt in order to minimize the impact of global climate change

In a coordination meeting with Commission IV of The Assembly on 13 April, 2010, the Minister of Marine Affairs and Fisheries (Mr. Fadel Muhammad) proposed extra budget of as much as Rp. 720 billion to establish the Agency of Fish Quarantine. This agency will monitor quality control and fisheries product safety, construct related CTI facilities, and establish a CTI secretariat to follow up on the CTI CY2010 regional action plan.

Indonesia has been planning research on the CTI Indonesia marine water area, which will be undertaken in Sulawesi and Maluku waters in August 2010. Currently, the CTI arrangement focuses on infrastructure.

Table 2.5.4. CTI Implementation Roadmap 2010–2011

CTI Roadmap for 2010 - 2011

CTI ROADMAP FOR IMPLEMENTATION PHASE		
DATE AND VENUE	ACTIVITY	DESCRIPTION
2010		
Immediate and ongoing – suggested to be completed before the Business Summit OR in March	Implementation of National Plan of Action in each CT country	<ul style="list-style-type: none"> • NPOA developed and adopted in each CT countries • Priorities in NPOA identified and annual work plans developed • Identify specific funding needed for specific activities (e.g., project level) and funding gaps • Secured funding (national or external) to implement annual work plans, particularly identified priorities • Implementation of actions in NPOAs and the RPOA
Immediate and ongoing	Interim Regional Secretariat supported	<ul style="list-style-type: none"> • Selected host, other CT governments and partners continue to provide support
January 18-21, Manila, the Philippines	CTI Business Summit	<ul style="list-style-type: none"> • CT countries present priority programs and identified funding gaps for national actions
After March and ongoing	Regional Secretariat related activities supported	<ol style="list-style-type: none"> 1. Campaign the achievement of CTI Summit 2. Resources mobilization and New Donors Engagement 3. Promote CTI Regional Priority Programs to Donors 4. Execute transition period process of the establishment of the CTI Regional Secretariat, including drafting of legal documents 5. Facilitating Monitoring and Evaluation on RPOA and NPOA Implementation 6. Secretarial Training and Capacity Building 7. Website and publications
Early April, venue tbd	Regional Planning Program Workshop	<ul style="list-style-type: none"> • Priorities in RPOA identified and annual work plans developed • Identify funding needed and funding gaps • Secured funding to implement annual work plans, particularly identified priorities • Implementation of actions in the RPOA
June (2 days; venue tbd)	Monitoring and Evaluation Working Group Meeting	<ul style="list-style-type: none"> • In-depth discussions on monitoring and evaluation system
July (2 days; venue tbd)	Financial Resources Working Group Meeting	<ul style="list-style-type: none"> • In-depth discussions on financial resources
July – August/Late August – Sept (2 days; venue Ambon, Indonesia)	6th Senior Officials Meeting (SOM6)	<ul style="list-style-type: none"> • In-depth discussions on regional focal themes, drawing on recommendations of Working Groups • Agreement on concrete collaborative actions
Back-to-back with SOM6 in Ambon, Indonesia	Third Ministerial Meeting	<ul style="list-style-type: none"> • Presentation and review of progress report • Other objectives to be determined • Scheduled around other events and relevant factors • Signing of Regional Secretariat establishment
November (2 days; venue the Philippines) and Financial Round Table	Seventh Senior Officials Meeting (SOM7) and High Level Financial Round Table	<ul style="list-style-type: none"> • Review of annual progress report

2011		
* Activities outlined during 2011 are <i>indicative</i> , and will be adjusted at SOM7.		
Immediate and ongoing	Implementation of National Plan of Action in each CT country	<ul style="list-style-type: none"> ▪ Priorities in NPOA identified and annual work plans developed, designating specific funding needed for specific activities (e.g., project level) ▪ Funding (national or external) secured to implement annual work plans, particularly identified priorities ▪ Implementation of actions in NPOAs and the RPOA
Immediate and ongoing	Interim Regional Secretariat supported	<ul style="list-style-type: none"> ▪ CT6 governments and partners continue to provide support?
On Going	Regional Secretariat related activities supported	<ul style="list-style-type: none"> ▪ Roadshow on the result of CTI Summit ▪ Scoping and New Donors Engagement ▪ Initial Activities on CTI Permanent Regional Secretariat Establishment ▪ Facilitating Monitoring and Evaluation on RPOA and NPOA Implementation ▪ Secretarial Training and Capacity Building ▪ Website and publications
June (2 days; venue tbd)	Working Group 1 Meeting	<ul style="list-style-type: none"> ▪ In-depth discussions on working Group 1 theme (based on goals on RPOA)
July (2 days; venue tbd)	Working Group 2 Meeting	<ul style="list-style-type: none"> ▪ In-depth discussions on working Group 2 theme (based on goals on RPOA)
May (2 days; venue PNG tbc)	8th Senior Officials Meeting (SOM8)	<ul style="list-style-type: none"> ▪ In-depth discussions on regional focal themes, drawing on recommendations of Working Groups ▪ Agreement on concrete collaborative actions
October (2 days; venue Malaysia tbc)	Ninth Senior Officials Meeting (SOM9) back-to-back with Ministerial Meeting 4	<ul style="list-style-type: none"> ▪ Preparations for Ministerial Meeting ▪ Review of annual progress report

Notes:

tbc : to be confirmed
tbd : to be decided

Source: Decision Document on CTI Roadmap for 2010–2011 on 5th Senior Official Meeting, SOM5, on 18 Nov., 2009

➤ **Obstacles and challenges**

- Lack of MPA network and common methodology for rapid assessment, identification, and boundary delineation of seascapes.
- Insufficient understanding of ecosystem dynamics and consequences, which is evident in actions on the ground.
- Unclear indicators (output/outcome) due to weak baseline data. Factors that affect the outcome of CTI NPOA are:
 - Insufficient incentive mechanisms and financial support for the establishment and maintenance of protected areas.
 - Lack of coordinated action plans for biodiversity protection among environment, agriculture, food, water, finance, and health ministries.
 - The costs of ecosystem services are not taken into account in national budgets but these services are adopted as national indicators of biodiversity and pressure on natural

ecosystems.

(ii) Recommendation

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

- EAFM and other marine resources should be launched. The main targets of EAFM are 1) Strong legislative, policy, and regulatory frameworks, 2) improved income, livelihoods and food security, and 3) effective management and sustainable trade.
- National CTI: there was a seminar in Bogor to follow up on the results of the SOM5 discussion in December 2009. In general, the following issues were discussed at the Bogor meeting: 1) Better coordination mechanism, 2) permanent office for CTI project, and 3) preparation of NPOA improvement for implementation of local activities in Indonesia.
- Carry out 'getting started' activities. During the first year of the CTI implementation phase, the Financial Resources Working Group of Indonesia, with assistance from the secretariat and outside expertise, needs to focus on a set of 'getting started' activities. These activities will be confirmed at future meetings of the Working Group of Indonesia; they can include, for example: 1) The collection and analysis of relevant information; 2) preliminary assessments and feasibility studies; 3) development of information management tools to assist decision-making on financial resources; and 4) outreach to key funding partners.

Indication of CY2009 Action 2:

- Finalise the draft of Government Regulation on Disaster mitigation and Coastal damage

(i) Analysis of progress/attainments

Table 2.5.5. Monitoring framework for CY2009 Action 2 in the Marine, Coastal and Fisheries sector

Implementation steps	Evaluation indicators	Verification measures
Organizing a project team for finalizing the draft of the Government Regulation on Disaster Mitigation and Coastal Damage	Draft/Final Government Regulation on Disaster Mitigation and Coastal Damage	Collecting information from DG of Marine, Coast and Small Islands
Drafting the regulation	Number of directors/managers assigned	Documents to review: Draft of the Government Regulation on Disaster Mitigation and Coastal Damage
Review by DG of Marine, Coast, and Small Islands		
Finalize the draft		

➤ **Status**

Finalization of the draft of the Government Regulation on Disaster Mitigation and Coastal Damage

Disaster mitigation policies have been stipulated in two laws: Law No. 24 Year 2007 (UU No. 24/2007) on Handling Disaster and Law No. 27 Year 2007 (UU No. 27/2007) on Management of Coastal Areas and Small Islands. Law UU No. 27/2007 stated that an additional Government Regulation on Disaster Mitigation and Coastal Damage needed to be developed because effective disaster mitigation requires regulated technical guidelines. In 2008, the Department of Maritime Affairs and Fisheries compiled a draft of the Government Regulation on Disaster Mitigation in Coastal Areas and Small Islands.

Program Results

The preparation processes have the following stages:

- A discussion on the draft of Disaster Mitigation in Coastal Areas and Small Islands at the inter-department level;
- Harmonization of the RPP of Disaster Mitigation in Coastal Areas and Small Islands in the Department of Justice and Human Rights; and
- Finalization of PP on Disaster Mitigation in Coastal Areas and Small Islands in the State Secretariat.

At the end of CY2009, the final draft of the Government Regulation was sent to the State Secretariat to be signed by the President and approved and recorded in the State Gazette.

Law No. 27/2007

The disaster mitigation issue is dealt with in four articles in Chapter X of Law No. 27/2007, namely, Article Nos. 48, 49, 50, and 51.

Article 48 states that the government and/or regional government is obligated to cover disaster mitigation in the construction of an integrated management plan of the utilization of coastal areas and small islands.

Article 49 states that disaster mitigation for coastal areas and small islands requires the involvement of the responsible government, the regional government, and/or the community.

Article 50 lists certain aspects that need to be paid attention to: 1) Social, economic, and community culture; 2) conservation of living environment; 3) utility and affectivity, and 4) area coverage.

Article 51 stipulates the obligations of the people and the relevant government/non-government institutions to contribute towards disaster management activities and rehabilitation for damage on coastal areas and small islands; this is to be further regulated by government regulation.

➤ **Obstacles and challenges**

No obstacles/challenges were identified.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

No recommendations were identified.

Indication of CY2009 Action 3:

- **Manage and Rehabilitate coral reef in 15 districts within 8 provinces (COREMAP)**

Indication of CY2009 Action 4:

- **Conduct Mapping Priority areas for rehabilitation and utilization in marine and coastal areas, and conduct mangrove rehabilitation management**

(*As the two indications are closely related, this report combines recommendations for them in one section)

(i) Analysis of progress/attainments

Indication of CY2009 Action 3:

Manage and Rehabilitate coral reef in 15 districts within 8 provinces (COREMAP)

**Table 2.5.6. Monitoring framework for CY2009 Action 3 in the Marine,
Coastal and Fisheries sector**

Implementation steps	Evaluation indicators	Verification measures
Identifying demarcation among MMAF, local governments, and NGOs	Progress/Draft of Village Coral Reef Management Plans	Collecting information from DG of Marine, Coast and Small Islands
Designing framework for support and coordination	Number of established marine conservation areas	Documents to review: <ul style="list-style-type: none">• Report/Documents on activities to manage and rehabilitate coral reef in the project sites• Draft COREMAP Phase II
Establishment of national project management offices in each project implementation unit	Number of national project management offices	
Prioritizing areas and projects	Number of reef watchers community groups	
Securing budget		
Producing detailed action plans		
Feedback and monitoring from the project sites		

➤ **Status**

GOI launched COREMAP in 1998 as a 15-year programme with the objective ‘to protect, rehabilitate, and achieve sustainable use of coral reefs and associated ecosystems in Indonesia, which will, in turn, enhance the welfare of coastal communities’. COREMAP was originally designed for 15 years (but was extended to 17 years due to political

decentralization in Indonesia).

The Ministry of Marine Affairs and Fisheries (*Departemen Kelautan dan Perikanan*) takes charge of COREMAP programmes in eight provinces and 15 districts. The programme is funded by the Asian Development Bank, the World Bank, the Global Environmental Facility, and the Indonesian government.

Plan and implementation phases of the COREMAP programme (reviewed in 2010):

Phase I: 'Initiation' phase designed to test and develops viable CBM systems in selected pilot areas (1998–2003); Executing Agency: LIPI; Funded by: ADB, GEF, WB, Central Gov., and Local Gov.

Phase II: 'Decentralization and Acceleration' phase to build upon and expand CBM systems to other sites (2004–2009); Executing Agency: Ministry of Marine and Fisheries; Funded by: ADB, Central Gov., and Local Gov. Extension of Phase II (2010–2011) has been appraised by National Development Plan Agency (Bappenas), Ministry of Finance (Depkeu), and ADB.

Phase III: A six-year 'Institutionalization' phase to ensure the sustainability of programme activities (2012–2017). Initial discussion between the Ministry of Marine and Fisheries, the PMO (Project Management Office), and ADB to design Phase III has commenced.

The main goal of COREMAP II is to protect the reefs by reducing the dependence of local communities on the reef ecosystem. COREMAP II will create alternative sources of income, increase public awareness of the importance of coral reefs, and strengthen the capacity to manage coral reefs. To this end, the activities are designed to socialize coral reef conservation amongst the public and promote collaborative government-local community development and management of reefs. The two main components of COREMAP II are:

Component 1: Institutional Strengthening and Project Management aimed at:

1. Strengthening of national and regional institutions in policy, strategy, guideline formulation, and resource planning and management;
2. Establishment and strengthening of a national network of Coral Reef Information and Training Centres CRITC);
3. Human resource development; and
4. Project management support.

Component 2: Community-based Resource Management and Development aimed at:

1. Community empowerment;
2. Community resource management;
3. Community social services and infrastructure development; and
4. Community livelihood and income generation.

More specifically, Pangkep and Buton are the pilot sites for COREMAP II programmes for the following actions:

- Enacting five regional regulations/governor's decrees and seven regional regulations/decrees on coral reef management; and
- Fully implementing certification programmes for live reef fish trade.

Main achievement of COREMAP

The programme selected priority sites and locations within 10 provinces: North Sumatra, Riau, North Sulawesi, South Sulawesi, Southeast Sulawesi, West Nusa Tenggara, East Nusa Tenggara, Maluku, and Irian Jaya. These locations will be expanded to 26 coastal provinces throughout Indonesia. In short, a specific approach has been structured around four components: 1) Community-based management, 2) surveillance and enforcement, 3) capacity-building (including training, monitoring, and evaluation) research, and 4) public awareness.

- Planting 2.2 million trees in 1,133 villages in 24 regencies in South Sulawesi.
- Two million freshwater fish fingerlings were released in 12 regencies in South Sulawesi.
- Transplantation of 22,222 corals has been carried out in 41 villages in Makassar and Pangkep as of May 2010.
- Expansion of coral reef rehabilitation areas through transplantation and artificial coral reefs.
- Designating more than 2.5 million ha marine conservation areas in 13 districts.
- Forming 1,632 community groups through community-based management projects.
- Establishment of 298 information centres at project sites.
- Installing 54 facilities for sanitation and clean water supply.
- Recruiting 732 extension workers.
- Distributing village funds and grant funds to 257 villages.
- Procuring five units of traditional boats.
- Distributing materials for sea partnership socialization to 310 villages.

Improvement of gender issue

Women's groups have been involved at the village level in formulating Marine Action Strategies and the corresponding Coastal Resource Management Plan/Coral Reef Management Plan (CRMP). CRMPs have been prepared by the stakeholders for all 57 projects sites and have been approved by village heads. The women's groups have been involved in the process of enforcing, at the village level, no-take zones in marine protected areas. No-take zones are enforced by local communities through the village assembly; they are approved by village regulations. Women hold distinguished positions in community livelihood and income generation areas. The profits from their alternative income-generating activities supplement their family income and go towards their children's educational expenses. In Batam municipality, women's groups produce fish crackers and support their husbands through mariculture activities. In Natuna District, women's groups have micro-businesses of producing fish crackers, coconut oil, and dried seaweed. In Mentawai District, women collect mangrove crabs and produce dried fish, smoked fish, souvenirs, and handicrafts for tourists. In Tapanuli Tengah, women produce smoked fish.

Achievements marine conservation area

General programmes of marine conservation comprise the scaling up of existing Marine Protect Areas (MPA), developing global network and partnership on coastal conservation management, enhancing collaborative management (government, communities, private sector, and NGOs), and developing capacity-building and sustainable funding mechanisms.

Strategic plan and targets:

- Expanding, scaling up, and developing Marine Protected Areas (total 15.5 million ha by 2014 and 20 million ha by 2020).
- Developing effective MPA management.
- Coral Reef Rehabilitation and Management Program (coral reef, mangrove, and seagrass) in 15 districts/municipalities and eight provinces.

The Conservation and Marine National Park division of MMAF holds that water conservation area management requires two new practices. First, the management of water conservation area should be regulated by a zoning system; second, authority over conservation area management should be moved from the central government to local governments so that they can oversee their own territories. MMAF has conducted many conservation programmes, for example, the Coral Reef Rehabilitation and Management Program (COREMAP II) and the National Program of Independent Community

Empowerment.

Regional governments, the MOF, and MMAF established a total of 13.5 million ha of national water conservation area in 76 regions in 2009.

The maximum scale of national water conservation area is 3.5 million ha in the National Marine Park in Savu (Nusa Tenggara Timur).

Table 2.5.7. National marine parks and water conservation areas in Indonesia

No	Conservation Areas	Number of Area	Area (Ha)
A	Initiated by Ministry of Forestry	40	5,418,931.55
	Marine National Parks	7	4,043,541.30
	Marine Nature Recreation Parks	18	767,102.00
	Wildlife Reserves	7	337,308.25
	Marine Nature Preserves	8	270,980.00
B	Initiated by Local Government and MMAF	36	8,110,136.11
	National Marine Protected Area Savu Sea Marine National park*	1	3,521,130.01
	District Marine Protected Area	35	4,589,006.10
	Total (A+B)	76	13,529,067.66

Source: Conservation and Marine National Park Office, MMAF

***Note of Savu Sea Marine National park:**

The Savu Sea MPA is the largest MPA in Indonesia, with around 4.9 million ha of sea and coastal area; it is located in eastern Indonesia. Savu Sea is known for its rich biodiversity and marine biota such as dugong, sea turtles, and dolphins. It is also an important migration route for whales. In addition, the diverse habitats and coral reefs of Savu Sea play a significant role both in marine life and in local communities, economically and socio-culturally. The Aquatic Conservation Area development project (NOA) was initiated by MMAF at Savu Sea to develop the widest NOA.

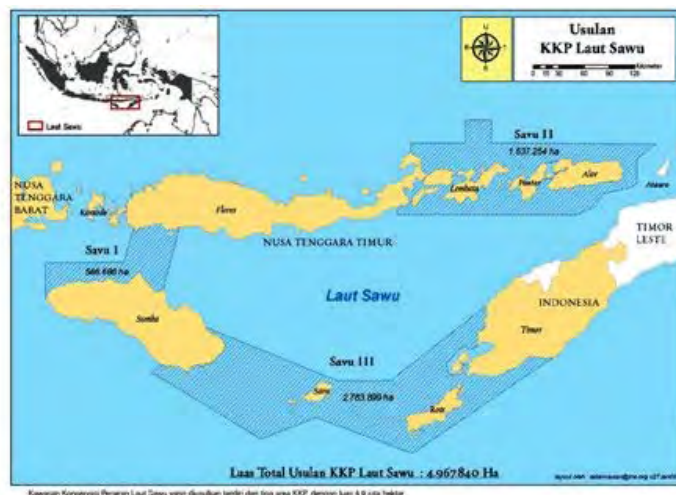


Figure 2.5.1. Area of Savu Sea Marine National Park

Indication of CY2009 Action 4:

Conduct Mapping Priority areas for rehabilitation and utilization in marine and coastal areas, and conduct mangrove rehabilitation management

Table 2.5.8. Monitoring framework for CY2009 Action 4 in the Marine, Coastal and Fisheries sector

Implementation steps	Evaluation indicators	Verification measures
Organizing a framework for the selection of priority areas in marine, coastal, and mangrove rehabilitation management Review of government regulation on fisheries resources conservation Review of COREMAP Phases I II Producing a provisional map for rehabilitation and utilization in marine and coastal areas Drafting the mangrove rehabilitation management plan Review by DG of Marine, Coast, and Small Islands	Enforced government regulation on fisheries resources conservation Number of on-site mapping areas of marine resources Number of established information centres Number of reef watchers community groups	Collecting information from DG of Marine, Coast and Small Islands Documents to review: <ul style="list-style-type: none"> • COREMAP Phase I • Draft COREMAP Phase II

➤ **Status**

MMAF applied the zoning programme for coastal areas in 44 regencies in 2010. A government regulation for the utilization of the outermost small islands has been proposed to the State Secretariat as an ‘umbrella law’.

The zone is to be divided into four sub-zones: The public exploitation zone, the conservation zone, the national strategic zone, and the channel zone. MMAF will cooperate with local communities and the local government as well as experts over the coastal zoning plan. There are specifications for the public exploitation zone such as aquaculture and the development of tourism areas. This zoning will provide a base for issuing coastal water business authorizations in the future.

MMAF plans the development of a ‘Minapolitan Area’ in CY2010–CY2014. The ‘Minapolitan Area’ is an effort to accelerate marine and fisheries development in fishery production; it can support the vision and mission of the MMAF. The aim of these areas is:

(1) to increase fish production and improve the quality of marine and fishery products, (2) to increase the income of fishermen and fish farmers, and (3) to increase economic growth in local areas.

The mapping of priority areas for rehabilitation and utilization in marine and coastal areas was completed in 2009.



Figure 2.5.2. Priority areas

The mapping covers Java, Madura, and Seribu Island, with a focus on specific spots:

- a. DKI Jakarta: North Jakarta.
- b. West Java: Bekasi Regency (mangrove), Karawang Regency (mangrove), Subang Regency (mangrove), Indramayu Regency (mangrove, coral reef, seagrass), Cirebon Regency (mangrove), Ciamis Regency (mangrove, coral reef), Garut Regency (mangrove, seagrass), and Tasikmalaya Regency (seagrass).
- c. Banten: Serang Municipality (mangrove) and Tangerang Regency (mangrove).
- d. Central Java: Pati Regency (mangrove), Rembang Regency (mangrove), Jepara Regency (mangrove), Demak Regency (mangrove), and Semarang Municipality (mangrove).
- e. DI Yogyakarta: Kulon Progo Regency (mangrove).
- f. East Java: Surabaya Municipality (mangrove), Gresik Regency (mangrove), Tuban Regency (mangrove), Pasuruan Regency (mangrove), Probolinggo Regency (mangrove), Situbondo Regency (mangrove), Banyuwangi Regency (mangrove), and Pamekasan Regency (mangrove).

Mangrove Rehabilitation Implementation

Replication Model: Rehabilitation of mangrove ecosystems in Java and Sumatra provinces.
 Scope of Activities: 1) Socialization and coordination, 2) training, 3) institutional capacity-building, and 4) mangrove rehabilitation.

- Mangrove rehabilitation has already been conducted in 6 out of 12 municipalities (expansion about 110 ha, planting of 53,500 mangroves).
- These activities were implemented by the local government with coordination and funding by the central government (MMAF).
- The tsunami hazard map has already been completed for Padang, Painan, Denpasar, Cilacap, and Gorontalo.



Figure 2.5.3. Mangrove rehabilitation sites

Table 2.5.9. Mangrove Rehabilitation Implementation in 2009

LOCATION	Municipalities	Expansion (ha)	Seedling	Species
1. Kota Semarang	(1) Desa Parean Girang (2) Kec. Kandang Haur	10	50000	Rhizophora sp. Avicennia sp.
2. Kab. Muko-muko	(3) Kec. Pasar Sebelah (4) Kota Muko-muko	10	50000	Rhizophora sp. Avicennia sp.
3. Kota Padang	(5) Padang	10	20,000 2,000	Rhizophora sp. Vegetasi Pantai
4. Pesisir Selatan	(6) Desa Mandeh (7) Kec. Koto IX Terusan	10	47,500 1,000	Rhizophora sp. Vegetasi Pantai
5. Brebes	(8) Desa Parean Girang (9) Kec. Kandang Haur (10) Pantai Bahagia	50	250000	Rhizophora sp.
6. Pamekasan	(11) Desa Tlanakan (12) Kec. Tlanakan	20	110000	Rhizophora sp. Avicennia sp.
Total		110	530,500	

The draft Plan of Priority Area Rehabilitation and Efficiency in Coastal and Marine Areas in CY2010–2014 lists the following schedule:

- 2010: 1) Mapping priority areas for rehabilitation and efficiency in the coastal and marine east coast area of Sumatra.
- 2011: 1) Mapping priority areas for rehabilitation and efficiency in the coastal and marine areas in West Nusa Tenggara.
2) Priority data base formulation for rehabilitation and coastal and marine efficiency.
- 2012: 1) Mapping priority areas for rehabilitation and efficiency of coastal and marine areas in Sulawesi.
2) Formulation of draft Master Plan for Rehabilitation and Efficiency of Coastal and Marine Areas.
- 2013: 1) Mapping priority areas for rehabilitation and efficiency of coastal and marine areas in Kalimantan.
2) Finalizing the Master Plan for Rehabilitation and Efficiency of Coastal and Marine Areas.
- 2014: 1) Updating the Master Plan for Rehabilitation and Efficiency of Coastal and Marine.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

- Scientific data and local conditions are vital to achieving COREMAP objectives through the participation of villagers (through appropriately amended procedures) in data collection and the provision of information for coral reef management.
- Local governments need to create task forces with dedicated staff and management responsibilities to ensure the effective coordination of coral reef rehabilitation and management in their regions.
- Public communication activities should be included in a national programme that targets key stakeholders such as enforcement agencies and that allows the development of local knowledge at COREMAP sites.
- LIPI, MMAF, and participating regional governments should continue to provide

adequate counterpart budgets to maintain and operate the systems and facilities established by the project. Financial support should be provided for community organizations and CBM activities.

- Structural countermeasures that use natural protection methods (soft structures) such as mangrove plantations/green belts along the coasts for erosion and tsunami threats is being developed. This activity covers the replanting and maintenance of mangroves.
- Local communities need to receive training to educate them of the importance of mangrove forests both economically and ecologically; training should also be provided on planting mangrove seedlings.
- MMAF and local governments should utilize COREMAP activities to designate and treat their marine conservation areas.
- ‘Eco-friendly aquaculture’ is the symbiosis of marine environmental conservation and aquaculture activity for regional development.
- The MPA network exemplifies multi-level cooperation for effective management of MPAs and MMAF programme development.
- The participation of women is frowned upon in some districts due to strict traditional customs and the absence of NGOs. MMAF and local governments should consider the strengthening of women’s group activities to improve livelihood and effective resource management.

Indication of CY2009 Action 5:

- **Conduct study for ocean carbon, and marine and coastal vulnerability to sea level rise**

(i) Analysis of progress in achieving CY2009 actions

Table 2.5.10. Monitoring framework for CY2009 Action 5 in the Marine, Coastal and Fisheries sector

Implementation steps	Evaluation indicators	Verification measures
Identifying research institutes to study ocean carbon and sea level rise	Progress/draft feasibility study for research networking	Collecting information from Agency for Marine and Fisheries Research and DG of Marine, Coast and Small Islands
Feasibility study for research networking of ocean carbon and impact of sea level rise	Proposal or related reports on ocean carbon and marine and coastal vulnerability to sea level rise	Documents to review: <ul style="list-style-type: none">• National Action Plan of Climate Change
Securing budget for strengthening research activities	Number of seminars or workshops	
Holding a seminar or workshop		

➤ **Status**

The Ministry of Marine Affairs and Fisheries (MMAF), Republic of Indonesia, has tried to minimize the impact of coastal disaster, especially for coastal communities and aquaculture. The Directorate General of Marine, Coasts and Small Islands and the Agency for Marine and Fisheries Research, both of which are under the MMAF, continue to formulate national policies and programmes to mitigate the adverse impacts of coastal disaster in Indonesia.

- A coastal vulnerability pilot project in Semarang is being conducted to develop methodology to be applied in other areas.
- A CO₂ flow study in Banten Bay, North West Java, is under implementation.

The research is divided into three stages:

Stage 1 (ongoing, commenced in April 2009): Field campaign, survey programme for water samplings with a focus on analysing the quantity and distribution of carbon parameters.

Stage 2 (2010): Integrating water sampling data and remote sensing data to produce a CO₂ flux map.

Stage 3 (2011): 1) Developing a coupled hydrodynamics and ecosystem/biogeochemical model that accounts for the effect of both these factors on CO₂ uptake by the Indonesian sea; 2) creating standard protocol for obtaining a CO₂ flux map in Indonesia.

- A National Scientific Communication Forum has been established. The Forum members

include: BRKT, Bakosurtanal, LAPAN, LIPI, ITB, ITS (Suravay Univ.), and IPB.

The tentative work plan for research on ocean carbon and marine and coastal vulnerability is shown in Table 2.5.11.

Table 2.5.11. Tentative work plan for research on ocean carbon and marine and coastal vulnerability

Research topic	2010	2011	2012	2013	2014
Ocean carbon	Monitoring marine and coastal environment-related CTI and climate change		Modelling of ecology and ocean carbon absorption	Application stage for marine and coastal management	
Coastal vulnerability	Study and monitoring vulnerability mapping marine and coastal areas				Analysis of adaptation policy for Climate change in Marine and coastal
	1) Java, 2) Bali 3) NTB	1) Sumatera 2) Kalimantan	1) Sulawesi 2) NTT	1) Maluku- Papua	

➤ **Collaboration**

National

1. The Indonesian Climatology and Meteorological Institute has proposed to buy new underway/in-situ equipment for measuring CO₂ parameters that will be used in a joint survey/research with the Agency for Marine and Fisheries Research (AMFR) and the Ministry of Marine Affairs and Fisheries (MMAF). The equipment can be installed on the research vessel. This opens up opportunities to expand the measurement of CO₂ parameters to wider oceanic areas.

International

1. The Lamont Doherty Earth Observatory (LDEO) of Columbia University, USA, has agreed to assist in analysing water samples from Banten Bay, Indonesia, for CO₂ parameters. LDEO has more sophisticated laboratory equipment for CO₂ parameters than Indonesia. From 2010 onwards, some water samples from Banten Bay will be sent to LDEO for CO₂ analysis.
2. Since 2006, AMFR, MMAF, and the First Institute of Oceanography, China (FIO), have been collaborating on research in oceanography by deploying oceanographic sensors in

the Indonesian seas. In January 2010, the FIO will add an additional sensor for measuring CO₂ parameters to the already deployed oceanographic sensor.

3. At the third Indonesia-China Joint Workshops on Oceanography and Marine Environment in Hangzhou, China, from 4–5 November, 2009, AMFR, MMAF, and FIO agreed that new research collaboration on ocean CO₂ flux would be initiated in 2010.

MMAF stated in May 2010 that the marine research and oceanographic survey would commence in a wide-ranging sea area from east to west Indonesia. This is the first time that multinational joint research has taken place in Indonesia utilizing research vessels from Australia, China, Timor Leste, and the United States. Indonesia has organized cooperation with many institutions, domestic as well as foreign. These institutions will contribute global research systems for sea and ocean observation. These contributions include marine monitoring in regional system, fish migration, and research on the impacts of climate change and the biodiversity of the marine ecosystem.

➤ **Obstacles and challenges**

- Partial Pressure of CO₂ (pCO₂) is still calculated using an indirect and inaccurate method, which uses dissolved inorganic carbon, DIC, and pH, due to difficulty in obtaining specialized direct devices.
- DIC measurement also relies on the conventional indirect method although the direct method is already employed.
- Capacity-building in terms of training/study for CO₂ measurement of the oceanic environment is necessary because expertise in this area is rare in Indonesia.
- More budgets are required for more frequent sampling of a wider coverage of the Indonesian region.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

- Continued implementation of current research activities.
- Strengthening analysis capacity of oceanographic data through collaboration and cooperation with universities and other research institutions in Indonesia.

2.5.4. Other recommendations related to the Marine, Coastal and Fisheries sector

(i) Overall Recommendations

Indonesia coastal areas have large potential for development because of their ecosystems and high biological productivity, such as coral reefs, mangrove forests, seagrass meadows, and so on. In the fisheries sector, the climate change adaptation agenda supports the vision of fisheries management in Indonesia. There is also a need to implement *integrated coastal management* for disaster mitigation. This approach allocates and utilizes the resource and environmental supportability of a coastal area. It includes planning, land utilization or allotment, maintenance, control, evaluation, rehabilitation, development, and conservation of the coastal environment. The MMAF aims to carry out regional development in adaptation to climate change. An 'environmental friendly coastal environment structuring model', which corresponds to coast development and environmental conservation, will be used as a pioneer case in coastal regions.

Climate change will affect the basic condition of the fisheries sector in Indonesia. In particular, it will suffer an inundation of cultured fisheries area, loss of economic assets and infrastructure, increased erosion, damage to cultured sites in coastal area, and damage to coastal biodiversity and small islands.

It is recommended that the GOI further strengthen research capacity for climate change mitigation, adaptation, and resilience of fisheries and aquaculture through:

- Research and study on climate change mitigation and adaptation in Marine, Coral, and Fisheries.
Rationale: MMAF gives priority to marine and oceanic research on climate change; however, scientific data and the research activity are still limited in Indonesia. The findings of this research are a basis for disaster management planning for coastal areas.
- Improved resilience of coastal areas and small islands.
Rationale: The Ministry of Marine Affairs (MMAF) and fisheries have conducted guidance and socialization on tsunamis at several places since 2003. However, this has been limited to the provincial and the regional/city level and has not had much impact on the community.
- Resilience of fisheries and aquaculture.
Rationale: The MMAF aims to carry out regional development in adaptation to climate change. An environment-friendly coastal environment structuring model will be used as a pioneer case in coastal regions.

(ii) Potential cooperation with GOJ/JICA

GOJ and JICA can cooperate with the GOI in achieving the aforementioned objectives.

The MMAF focuses on aquaculture development and is finalizing a plan to triple production by 2014. It is studying the potential of aquaculture production in parts of Indonesia through workshops held in Sulawesi and Surabaya in January, and through a workshop scheduled in Batam. Seaweed, groupers, and other mariculture species have been placed in priority aquaculture activity by the MMAF.

Table 2.5.12. Production Plan of Aquaculture by Main Commodity, 2009–2014
(Unit : ton)

No.	Species	2009	2010	2011	2012	2013	2014	2009 to 2014 increasing (%)
Total		4.780.100	5.376.200	6.847.500	9.415.700	13.020.800	16.891.000	353
1	Seaweed	2.574.000	2.672.800	3.504.200	5.100.000	7.500.000	10.000.000	389
2	Catfish	332.600	495.600	749.000	1.146.000	1.777.000	2.783.000	837
3	Tilapia	378.300	491.800	639.300	850.000	1.105.000	1.242.900	329
4	Milkfish	291.300	349.600	419.000	503.400	604.000	700.000	240
5	Shrimp	348.100	400.300	460.000	529.000	608.000	699.000	201
6	Carp	254.400	267.100	280.400	300.000	325.000	350.000	138
7	Gurami	38.500	40.300	42.300	44.400	46.600	48.900	127
8	Barramundi	4.600	5.000	5.500	6.500	7.500	8.500	185
9	Grouper	5.300	7.000	9.000	11.000	15.000	20.000	377
10	Others	553.000	646.700	738.800	925.400	1.032.700	1.038.700	188

(Source: Directorate General of Aquaculture, MMAF January 2010)

- Target species;

There is a list of nine major aquaculture species on the national development strategy of MMAF: 1) Seaweed, 2) Grouper 3) Catfish, 4) Tilapia, 5) Milkfish, 6) Shrimp, 7) Carp, 8) Gurami, and 9) Barramundi.

The targeted species will be selected from the list according to demand.

- Target areas

MMAF has promoted aquaculture development in eastern Indonesia, where regional development is an especially important issue. Aquaculture technology development and dissemination are indispensable to future local revitalization. Particularly, Bali, Lombok, and

Sulawesi are good candidate sites that have convenient access, infrastructure maintenance, and so on.

- **Research Institute and TIU (Technical Implementation Unit for fisheries production) in eastern Indonesia**

A national research institute for mariculture and TIUs under MMAF can be designated for the project. There is the possibility of cooperation with the national institute and local aquaculture development centres in project activities. In eastern Indonesia, the three TIUs (located in Lombok, Takalar, and Ambon) and GRIM (Gondol Research Institute for Mariculture) in Bali can implement the project.

- **Tentative name of the project: ‘Strengthening integrated coastal management’**

1. Overall Goal

Introduce and expand integrated coastal management in eastern Indonesia.

2. Project Purpose

Improve community-based coastal management and aquaculture technology in eastern Indonesia technology development.

3. Output of the Project

1) To advance aquaculture research in GRIM and TIUs.

2) To introduce adapted technology for eco-friendly aquaculture to local fisherman through technical guidance from GRIM and TIUs.

3) To strengthen community-based coastal management in priority regions in eastern Indonesia.

4. Activities

1-1) To improve grouper, abalone, and seaweed seedling production technology.

1-2) To improve aquaculture feed.

1-3) To improve diagnosis methods and prevention for fish disease.

2-1) To introduce eco-friendly aquaculture technology in priority regions.

2-2) To introduce technical training at GRIM and TIU's for local fisherman.

2-3) To implement technical guidance in local areas.

3-1) To conserve biodiversity in coastal areas.

3-2) To involve local communities in natural resource and aquaculture management.

3-3) To improve community-based coastal management in priority regions.

3. Crosscutting Issues

3.1. Cross-sectoral Issues

3.1.1. Summary of Cross-sectoral Issues

<Outline of Outcome and Indication of CY2009 Actions>

Cross-sectoral issues have seven components that are related to both mitigation and adaptation policies: (i) Understanding the impact of climate change, (ii) mainstreaming climate change in the National Development Programme, (iii) spatial planning, (iv) CDM, (v) co-benefits, (vi) fiscal incentives, and (vii) early warning systems.

Table 3.1.1. Progress in Cross-sectoral Issues in CY2009 and recommendations

Understanding the Impact of Climate Change			
Anticipated outcomes 1:			
- The First National Communication, submitted to the UNFCCC in 1999, is updated.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
1	Finalize draft of the Second National Communication	Attained	- Establishment of national greenhouse gas inventory.
Mainstreaming Climate Change in the National Development Planning			
Anticipated outcomes 2:			
- Policy coordination on climate change is enhanced.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
2	Fully operationalize the Steering Committee for climate change program.	Attained	- Not applicable.
Anticipated outcomes 3:			
- Policies to respond to climate change are linked to the national budget.			
No	Indication of CY2009 Actions	Progress	Recommendations/Comments
3	Draft <i>the Medium Term National Development Plan for 2010-2014</i> that integrate Program action and measures to respond to climate change.	Attained	- Not applicable.
4	Conduct Comprehensive and Sectoral assessment (Roadmap) on climate change planning and programming.	Attained	- Not applicable.

Spatial Planning			
Anticipated outcomes 4:			
- Spatial plans are improved to incorporate climate change concern.			
No	Indication of CY2009 Actions	Progress	Recommendations/Comments
5	Continue monitoring and evaluating the implementation of National Spatial Plan to Provincial and Regency/City Spatial Plan.	Attained	- Strengthen support for local governments to conduct the self-review process by preparing workshops to provide basic skills/knowledge for the review process while informing them of estimated requests/comments from their respective line ministries.
Anticipated outcomes 5:			
- Spatial plan network at the national level is enhanced.			
No	Indication of CY2009 Actions	Progress	Recommendations/Comments
6	Start developing a spatial plan database, connecting relevant central governmental agencies.	In Progress	- Not applicable.

CDM			
Anticipated outcome 6:			
- To meet the total number of CDM projects stipulated in National Action Plan.			
No	Indication of CY2009 Actions	Progress	Recommendations/Comments
7	Continue to approve and implement CDM projects to achieve NAP target.	Attained	- Continue approving CDM projects in 2010

Co-benefits			
Anticipated outcome 7:			
- Planning/Implementation capacity of co-benefit approach is enhanced through model transactions.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
8	Complete F/S on selected locations.	Attained	- Continue CY2010 actions: Implement two pilot projects

Fiscal Incentives			
Anticipated outcome 8:			
- Develop fiscal incentive framework for GHG emission reduction with promoting private led investment.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
9	Prepare comprehensive fiscal incentive blue print.	Attained	- Not applicable

Early Warning Systems			
Anticipated outcome 9:			
- Data and information regarding meteorological early warning system available.			
No.	Indication of CY2009 Actions	Progress	Recommendations/Comments
10	Install 19 Automatic Weather Stations (AWS). Install 8 weather RADARs. Install 11 Digital Rain Gauges.	Attained	- Not applicable

3.1.2. Background of the policy actions/targets

(i) Overall Situation

In addition to the aforementioned climate change mitigation and adaptation policies, the GOI is addressing significant policy actions for: 1) Understanding the impact of climate change, 2) mainstreaming climate change issues into national development planning, 3) improving spatial planning, 4) facilitating CDM projects, 5) understanding the potential of co-benefits projects, 6) preparatory study to design fiscal incentive framework for GHG emission reduction, and 7) improving meteorological early warning systems.

These issues and actions are monitored as crosscutting issues in the ICCPL framework. The first two of these issues are particularly important because any policy action in the medium or long term will depend on development plans that reflect an up-to-date analysis of the potential impact of (and necessary measures to respond to) climate change.

With regard to this understanding of the impact of climate change, preparatory studies for *the Second National Communication (SNC)* have made solid progress.

The mainstreaming of climate change is also in progress. The Steering Committee for the Climate Change Program Loan was launched on 14 November, 2008; the *National Development Planning: Indonesia Response to Climate Change* was published in July 2008; and 27 mitigation and adaptation policies were listed in *the Governmental Action Plan for 2009*.

In addition to these activities, the National Council for Climate Change (NCCC) was established by ministerial decree in October 2008. The first meeting of the council was convened on 18 December, 2008; it was agreed at this meeting that the objective of NCCC was to facilitate overall policy actions/reforms related to climate change through:

1. Data collection on the possible impacts of climate change;
2. Promoting a sector-based approach;
3. Capacity development for responding to climate change;
4. Institutional reform, including strengthened cooperation among agencies;
5. Enlightenment of the local people;
6. Forming strategy for low carbon development in cooperation with KLH; and
7. Foundation of the Low Carbon Development Fund.

In light of the aims of the NCCC, its strategies and activities need to be carefully monitored as well as its national communication, national development plans, and roadmaps.

(ii) Priority Issues

Current issues

In the seven sub-sectors in the crosscutting sector, two major issues that need to be continuously supported and monitored are: 1) Understanding the impact of climate change, and 2) mainstreaming climate change issues.

In particular, following the preparation/issuance of development plans and roadmaps, further institutional arrangements are needed for the mainstreaming of climate change issues in overall development planning. Various committees, councils, and agencies related to climate change are being established as the GOI launches new policy projects. Coordination among these committees, councils, and agencies needs to be strengthened to clearly assign responsibilities and facilitate cooperation.

GOI's future direction

The significance of the actions in this sector lies not only in their outcome but also in the effects they will have on the policies of other sectors. Therefore, in order to be able to look back on the three years from 2007 to 2009 as a successful period, the GOI needs to follow up on these actions as follows⁹⁴:

1. GHG inventory and monitoring system;
2. Research on climate projection with complete data and refined methodologies;
3. Research on impact of climate change and local vulnerability;
4. Establishment of information system for adaptation;
5. Capacity-building of national ministries and agencies (on adaptation); and
6. Continuous improvement of sectoral and regional development planning.

(iii) JICA's and other donor's existing/potential cooperation

Existing cooperation

JICA has been implementing several projects related to cross-sectoral actions in the Policy Matrix. First of all, in relation to spatial planning, JICA has implemented a loan project called the National Geo-Spatial Data Infrastructure Development Project with the National Coordination Agency for Surveys and Mapping (Bakosurtanal) on Spatial Data Network and information systems. Several ministries previously produced maps for their own use, which they did not share with related ministries. Therefore, it is important to have a common database of national mapping for the purposes of spatial planning and sectoral policy development. This loan aims to improve management and utilization of electronic

94 Bappenas 2009 (ICCSR).

data of maps/spatial data in Indonesia and provide equipment for establishing national spatial data network among 14 related ministries and agencies.

The Ministry of the Environment, Japan, through OECC, provides support for co-benefit. The Governments of Indonesia and Japan signed a joint statement in 2007 to conduct activities using the 'co-benefit' approach to reduce GHG emissions and boost environmental and developmental co-benefits in Indonesia. Feasibility studies on a waste management project and a slaughterhouse project have been conducted in two cities, Palembang and Banjarmasin, since 2008 and will be completed by March 2010. After the studies have been completed, JICA will investigate opportunities to implement the two as model projects. In addition, JICA will hold a training course in Japan to enhance the capacities of the relevant stakeholders (primarily government officials) in co-benefit project development in Indonesia in 2009.

On the fiscal incentives, JICA conducted a 'Study on Fiscal and Non-fiscal Incentives to Accelerate Private Sector Geothermal Energy Development in the Republic of Indonesia' in 2008–2009. This study was on the further utilization of geothermal sources in Indonesia that are currently not fully exploited. It recommends that the most important policies are pricing incentives such as the feed-in tariff incentive.

In addition to a series of existing assistance schemes, JICA has been improving its Cooperation Program for Climate Change as its overall climate change cooperation policy for Indonesia. As a part of this programme, technical cooperation projects related to cross-sectoral issues are under preparation. First, the Low Carbon Development Strategic Assistance Project has been set up to mainstream climate change and to assist the preparation of NAMA/NAPA. This project is based on the Roadmap for Mainstreaming Climate Change into Development Planning in Indonesia. Second, the Enhancing National Capacity in Developing National GHG Inventory System Project assists the development and sustainable implementation of an inventory system. These projects are expected to be implemented in 2010.

Numerous donors and stakeholders are also involved in cross-sectoral climate change cooperation in Indonesia. An overview of the development assistance activities of donors has been presented in the following table.

UNDP is assisting the preparation of the Second National Communication with the Ministry of Environment. GTZ supports the preparation of the Roadmap for Mainstreaming Climate Change into Development Planning in Indonesia. The climate change roadmap

aims to incorporate the National Action Plan on Climate Change (2007) into the five-year midterm development plan (RPJMN 2010–2014) and the RPJMN until 2030. The roadmap will integrate future priority programmes and activities with national planning and budget allocation.

Table 3.1.2. Assistance Supported by Donors in the Crosscutting Sector

Donors	Title/Issue
Japan	<ul style="list-style-type: none"> ➤ Low Carbon Development Strategic Assistance Project (JICA) <ul style="list-style-type: none"> ➤ Inventory ➤ NAMA/NAPA ➤ Energy self sufficient village program and CDM application ➤ Vulnerability assessment ➤ National Geo-Spatial Data Infrastructure Development Project (loan, JICA) ➤ Study on Fiscal and Non-fiscal Incentives to Accelerate Private Sector Geothermal Energy development(JICA)
UNDP(GEF)	<ul style="list-style-type: none"> ➤ 2nd National Communication
Germany (KfW, GTZ)	<ul style="list-style-type: none"> ➤ Policy advice for climate change (GTZ) <ul style="list-style-type: none"> ➤ Roadmap, NAMA ➤ Vulnerability assessment
France (AFD)	<ul style="list-style-type: none"> ➤ Roadmap, NAMA (Forestry)
UK, Netherlands	<ul style="list-style-type: none"> ➤ Study on Peatland
Australia (AusAid)	<ul style="list-style-type: none"> ➤ Green Paper and follow-up

Potential cooperation

The lack of information such as rigorous climate data and adaptation analysis for climate policy development has been identified as an overall cross-sectoral issue. Additionally, coordination and role-sharing among ministries and agencies are not enough in certain areas. It has been recommended that mitigation policies and actions be improved through:

- Enhancing the data available for policy-making, such as GHG inventory data for mitigation policy development and domestic future climate forecasts, and impact and vulnerability analysis for adaptation policy;
- Further mainstreaming of climate change issues in all planning, the improvement of institutions related to climate change, and the implementation of climate policies.

In this regard, it has been recommended that the GOJ/JICA commence related technical cooperation projects such as the Enhancing National Capacity in Developing National GHG Inventory System Project, the Study on Climate Change Vulnerability in Indonesia (from improvement of data availability and quality to vulnerability assessment), and the Low Carbon Development Strategic Assistance Project.

Also, following the feasibility study, the implementation of the two aforementioned co-benefit projects is recommended.

3.1.3. Analysis of progress and recommendation

Understanding the Impact of Climate Change

Anticipated Outcome 1:

The First National Communication, submitted to the UNFCCC in 1999, is updated

Indication of CY2009 Action 1:

- **Finalize draft of the Second National Communication**

Indonesia signed the UNFCCC in June 1992. The UNFCCC articulates that ‘communicating relevant information on the most effective ways to reduce emissions and adapt to the adverse effects of climate change also contributes towards global sustainable development and requires the parties to submit national reports on implementation which contain information on emissions and removal of greenhouse gases (GHGs) and details of the activities a party has undertaken to implement the convention’.

Indonesia submitted the First National Communication (FNC) on Climate Change in 1999, which addressed the emission inventory of greenhouse gases and provided a general description of measures. Nevertheless, the KLH realized that the Indonesian people were still unconvinced of the imminent impacts of climate change. It also realized that concern about necessary measures in response to climate change—particularly to mitigation measures at the local level and adaptation measures on the whole—was insufficient.

Thus, in 2007, the KLH set up a new project to prepare the Second National Communication. This project was supported by the United Nations Development Programme (UNDP) and the Global Environment Fund (GEF). It started by reviewing, along with the related government agencies and NGOs, the First National Communication and identifying various points to be improved in order to develop the Second National Communication. The points are as follows:

1. Outdated data
 - National inventory was based on data from 1990 to 1994.
2. Limited scope of analysis
 - Inventory did not cover sectors such as non-solid waste.
 - Vulnerability assessment focused only on coastal areas and health issues; forestry and agriculture sectors were not included.

- Information on mitigation measures did not identify potential barriers.
3. Lack of link between issues, policies, and impacts
 - National circumstances analysis included aspects such as population, policy structure, and economy; however, the link of these aspects to emission and vulnerability was not clear.
 - Emission projection did not analyse the impact of long-term national development policies.
 4. Lack of discussion on prioritised issues or policies
 - Priority of the policy options was not identified.

The KLH project team aimed to overcome the weaknesses of the First National Communication. It created four working groups in 2007 that were responsible for combining the six outputs listed below in the finalized Second National Communication.

Working Group A is responsible for the following:

Output 1: National circumstances

Output 5: Other information including 'National Activities and Programmes'

Output 6: Constraints and gaps, and related financial, technical, and capacity needs

Working Group B is responsible for the following:

Output 2: Greenhouse gas inventory

Working Group C is responsible for the following:

Output 3: Measures to facilitate adequate adaptation to climate change

Working Group D is responsible for the following:

Output 4: Measures to mitigate climate change

The SNC is expected to be an essential source of information for GOI policy design and implementation in responding to climate change issues. In particular, it should be noted that the project team placed more emphasis on potential adaptation measures because various sectors in Indonesia are vulnerable to the impacts of climate change.

(i) **Analysis of progress/attainments**

Table 3.1.3. Monitoring framework for CY2009 Action 1 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Organize a project team and study/drafting taskforces to prepare chapters - Conduct study - Draft the chapters - Rounds of stakeholder consultations for each chapter - Revision of chapters to reflect consultations - Public consultation meeting - Finalization of the draft 	<ul style="list-style-type: none"> - Finalized draft of the Second National Communication - Progress/schedules of stakeholder consultation meetings - Progress/schedules of revision 	<ul style="list-style-type: none"> - Collecting information from KLH and studying/drafting taskforces. - Documents to review: <ul style="list-style-type: none"> • Finalized draft of the Second National Communication • Documents prepared for the stakeholders' consultation meetings

➤ **Status**

The following contents of the SNC were summarized in a 43-page document titled *The Summary for Policy Makers*, which was issued by KLH in November 2009.

- National circumstances, including background information on population, economic growth, and persistent poverty;
- National GHG Inventory, which provides a overview of GHG emissions from each sector during the period from 2000 to 2005; this states the necessity to improve emission estimates from the forestry sector;
- Steps Planned to Implement the Convention, which describe necessary actions for mainstreaming Climate Change policies in the National Development framework;
- Measures to Facilitate Adequate Adaptation to Climate Change, which summarize the predicted impacts of climate change and potential actions in the agriculture, coastal areas and islands, water resource management, and forestry sectors;
- Measures to Mitigate Climate Change, which describe potential actions to reduce GHG emissions in the energy, forestry, agriculture, livestock, and waste management sectors; and
- Barriers and Related Financial, Technical, and Capacity Needs.

Judging from above contents, the SNC covers the four major problems identified with the FNC, i.e. outdated data, limited scope of analysis, lack of link between issues, and lack of discussion on priorities. The analysis is mainly based on data from 2000–2005, which is 10 years more recent than the data previously used. Some of the major sectors that were missing in the FNC, i.e. forestry, solid waste, and agriculture, have been added in the SNC.

The Adaptation section describes the link of poverty and vulnerability to the impacts of climate change. Finally, SNC articulates the necessity for data collection, information development, and knowledge management in the initial period; concrete activities have been emphasized in later stages.

However, the complete SNC document is still being finalized because some sectors are yet to make revisions. KLH and the working groups continue revising the main body of the SNC. The LULUCF and peatlands issues require further data collection and analysis for enhancing accuracy. Information from the Indonesia Climate Change Sectoral Roadmap (ICCSR) will be incorporated into the SNC, as stated by the KLH. It is expected that the SNC will be finalized by July 2010 after it incorporates information from the ICCSR, which was launched in March 2010. According to the UNFCCC decision, Indonesia has to submit its SNC by 2011. KLH and the working groups plan to submit it by the end of 2010, however.

In the forestry and agriculture sectors, Indonesia's National Carbon Accounting System is under development with the support of AusAID. This system is intended to provide information on Indonesia's land-based emissions.

The final version of the SNC will comprise seven output documents:

1. National circumstances;
2. Greenhouse gas inventory;
3. General description of steps taken or envisaged to implement the convention
4. Measures to facilitate adequate adaptation to climate change;
5. Measures to mitigate climate change;
6. Other information including 'National Activities and Programmes'; and
7. Constraints and gaps, and related financial, technical, and capacity needs.

➤ **Obstacles/challenges**

The main challenges in developing the SNC are coordinating various sources of data and changing sectoral policies that may affect the calculation of emissions in the baseline scenario. There is no clear guideline on how the baseline has to be set up. Therefore, the main challenge in developing mitigation strategies is ensuring sector consensus when developing the baseline.

Support from UNDP to KLH for the Second National Communication ended in 2009 and KLH now wishes to find further donor assistance to improve the contents of the SNC.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

KLH finalized the preliminary documents and issued a Summary for Policy Makers of the Second National Communication in November 2009.

➤ **Recommendations for beyond 2010**

Not applicable.

The draft of the Second National Communication has to be shared with and reviewed by the A&M team at an early stage for further monitoring and advisory.

Establishment of national greenhouse gas inventory

After the enactment of the regulation on greenhouse gas inventory, a national GHG-inventory system or SIGN (Sistem Inventarisasi GRK Nasional) unit in KLH is expected to be established by presidential decree. Further guidelines will then be prepared by ministerial decree. Institutional and staff capacity-building is required in order to continuously collect and update national greenhouse gas data.

Mainstreaming Climate Change in the National Development Planning

Anticipated Outcome 2:

Policy coordination on climate change is enhanced

Indication of CY2009 Action 2:

- **Fully operationalize the steering committee for coordinating climate change program**

The GOI recognises potential obstacles in the effective implementation of policies that respond to climate change issues. Firstly, climate change issues cannot be solved by standalone processes as these issues are related to each other. Thus, insufficient coordination among related ministries and agencies may hamper the effectiveness of policy planning and implementations. Secondly, climate change policies may have insufficient funding if no specific national budget is allocated to climate change or if climate change is not incorporated into regular development programmes.

In order to overcome these obstacles, the GOI needs to mainstream climate change issues into its development programmes. Therefore, the GOI needs to enhance policy coordination on climate change so that related ministries and agencies can effectively cooperate to tackle these issues; the GOI also needs to secure the budget to enable these policies to respond to climate change by linking them to long-term national planning.

On this basis, the GOI has been seeking the cooperation of foreign donors to develop its capacity to respond to climate change and strengthen its financial base. The Climate Change Program Loan provided by the GOJ and the Government of France in 2007–2009 has been the most accessible medium for the GOI, through which it has tackled climate change issues with foreign donors.

Bappenas and the GOI's related line ministries discussed the necessary policy actions in five sectors with the GOJ. These five sectors are the LULUCF, energy, water resource and sanitation, agriculture, and cross-cutting issues sectors. Bappenas also prepared a policy matrix that defines the outcomes and target actions of each sector in CY2007–CY2009.

At the same time, the Steering Committee for the Climate Change Program Loan was organized by representatives from the GOI, GOJ/JICA, and the Government of France to review the progress of the target actions and to set the overall direction of the scheme. Following the Bappenas ministerial decree to establish a steering committee, which was issued in October

2008, the first meeting of the Steering Committee for the Climate Change Program Loan was convened on 14 November, 2008.

(i) Analysis of progress/attainments

Table 3.1.4. Monitoring framework for CY2009 Action 2 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Extract lessons and weakness of the current steering committee from a review of CY2008 activities - Procedure for convening the 4th steering committee. <ul style="list-style-type: none"> • Draft agenda • Stakeholders review of agenda • Convention of SC • Draft minutes of SC • Stakeholders review of minutes of SC - Procedure for convening the 5th Steering Committee - Procedure for convening the 6th Steering Committee 	<ul style="list-style-type: none"> - Draft and finalized agenda of the 4th, 5th, and 6th SCs - Draft and finalized minutes of the 4th, 5th, and 6th SCs 	<ul style="list-style-type: none"> - Attending SCs - Reviewing the draft and finalized agenda of SCs - Reviewing the draft and finalized minutes of SCs - Reviewing the stakeholders' comments at SCs on the Progress Report, Interim Report, Draft Final Report, Final Report, and the Draft Programme Evaluation Report - Interviews of officers in Bappenas, AFD, JICA Indonesia office, Embassy of Japan on issues related to the operation of SCs

➤ **Status**

The Steering Committee Meetings for the Climate Change Program Loan

Three Steering Committee Meetings for the Climate Change Program Loan were convened, as scheduled, in CY2009:

The Second Steering Committee Meeting for the Climate Change Program Loan was convened on 12 February, 2009. On the agenda was:

1. Overview of Progress in the CY2008 Policy Matrix and Prospect of Policies and Actions in CY2009;
 2. Policy Discussion on the Forestry Sector; and
 3. Policy Discussion on the Energy Sector.
- The Third Steering Committee Meeting for the Climate Change Program Loan was convened on 20 May, 2009. The major issues on the agenda were:
 - a) Progress and Acknowledgement of Policy Matrix in 2008 and Overview of Exiting 2009 Policies and Actions with a special focus on proposed modifications;
 - b) Overview of Indonesian National Disaster Risk Reduction Action Plan

- (2010–2013) and proposed 2009 Policy Actions;
 - c) Overview of Indonesian Strategy of Climate Change in Marine, Coastal and Fisheries Sector and proposed 2009 Policy Actions; and
 - d) GOI policy for supporting renewable energy development and promoting energy conservation in general, with a special focus on geothermal exploration and tariff policy.
- The Fourth Steering Committee Meeting for the Climate Change Program Loan was convened on 24 November, 2009. The major issues on the agenda were:
 - a) Progress and Attainment of policy actions stated in the CY2009 Policy Matrix;
 - b) Potential future direction of the Climate Change Program Loan, such as providing a platform of multi-lateral and bilateral cooperation addressing climate change issues; and
 - c) Participant governments reaching a basic agreement on the monitoring results of CY2009 policy actions and CY2010 policies at the Fifth Steering Committee Meeting, to be scheduled in March 2010.

Other Steering Committee Meetings related to Climate Change issues in Indonesia

Besides the Steering Committee meetings for the Climate Change Program Loan, two other Steering Committees were planned in CY2009 to discuss climate change issues and policies in Indonesia:

- The Steering Committee Meeting for the Climate Change Roadmap.
- The Steering Committee Meeting for Indonesian Climate Change Trust Fund.

➤ **Obstacles/challenges**

No obstacles/challenges were identified in the CY2009 target.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

Mainstreaming Climate Change in the National Development Planning

Anticipated Outcome 3:

Policies to respond to climate change are linked to the national budget

Indication of CY2009 Action 3:

- Draft *the Medium Term National Development Plan for 2010-2014* that integrate Program action and measures to respond to climate change

The GOI implements its National Economic and Social Development policies in line with five-year development plans that cover prioritised policies such as industrial development, urban development, regional development, transportation, education, social security, finance, and so on.

During the last national medium-term development plan (2004–2009), Indonesia experienced significant changes in its economic, social, and natural environment. Global financial crises caused currency fluctuation; natural disasters intermittently hit the region; and the urgency of climate change issues has been widely recognised. These circumstances prompted the government to prepare the current five-year plan (2010–14), which covers wider issues than previous plans. Climate change policies are among these significant issues.

(i) Analysis of progress/attainments

Table 3.1.5. Monitoring framework for CY2009 Action 3 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Organizing a project team for producing the chapters/sections on Climate Change in the National Development Plan- Drafting the chapters/sections on Climate Change in the National Development Plan- Rounds of stakeholder consultations- Revisions to reflect consultations	<ul style="list-style-type: none">- Draft or Finalized National Medium Term Development Plan- Progress/schedules of stakeholder consultation meetings- Progress/schedules of revision	<ul style="list-style-type: none">- Collecting information from Bappenas- Documents to review:<ul style="list-style-type: none">• Draft National Development Plan• Documents prepared for stakeholder consultation meetings

➤ Status

Bappenas drafted a medium-term development plan by October 2009. The draft was reviewed in several steps, i.e. discussion at the cabinet meeting, public consultation meetings, etc.

Following the comments/feedback obtained at above meetings, Bappenas finalized the Medium Term National Development Plan and issued it on 5 February, 2010.

Climate change is identified as one of four major issues that require mainstreaming and cross-field policy arrangements in the RPJMN 2010–2014. The three other issues are poverty reduction, development of small islands and coastal areas, and child protection ⁹⁵.

➤ **Obstacles/challenges**

No obstacles/challenges were identified in the CY2009 target.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

95 Bappenas 2010 (RPJM 2010–14), Book II, Chapter I.

Indication of CY2009 Action 4:

- **Conduct Comprehensive and Sectoral assessment (Roadmap) on climate change planning and programming**

GOI has been formulating a roadmap to integrate climate change issues into the National Development Plan. The roadmap contains results of scientific projections on the impact of climate change, vulnerable areas and sectors, and related development issues with a 20-year timeframe (2005–2025).

Based on IPCC's three scenarios of climate change, the roadmap mentions the projections of the impacts of climate change in Indonesia, such as surface temperature, sea level rise, precipitation change, and increased chances of extreme weather. The roadmap also lists priority policy sectors to be integrated into the National Development Plan: The 1) forestry, 2) energy, 3) transportation, 4) industry, 5) waste management, 6) agriculture, 7) marine and fisheries, 8) water and 9) health sectors.

(i) Analysis of progress/attainments

Table 3.1.6. Monitoring framework for CY2009 Action 4 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Organize a project team and study/drafting taskforces to develop roadmap- Conduct comprehensive assessment in line with the inventory chapter of the draft Second National Communication- Rounds of stakeholder consultations- Revision to reflect consultations- Public consultation meeting- Finalization of the roadmap	<ul style="list-style-type: none">- Draft or finalized Roadmap- Results/schedules of stakeholder consultation meetings	<ul style="list-style-type: none">- Collecting information from Bappenas- Documents to review:<ul style="list-style-type: none">• Draft and finalized roadmap• Documents prepared before and as the result of stakeholder consultation meetings

➤ **Status**

Bappenas issued *the Synthesis Report: Indonesia Climate Change Sectoral Roadmap* in December 2009, which has the following components:

- Background;
- Identification of Climate Change hazards in Indonesia;
- Analysis of the following sectors:
 - Water Resource, Marine and Fisheries, Agriculture, Health for adaptation;
 - Transportation, Forestry, Industry, Energy, and Waste for mitigation; and

- Crosscutting issues

Analysis is based on the latest data, current conditions, predicted impacts, and potential measures for adaptation and mitigation. Among the various statements and data, two series of matrixes are worth noting:

- the matrix of sectoral mitigation actions stating the potential of reducing GHG emission and abatement costs; and
- the matrixes of activities that provide an overview of necessary actions in four year periods (2010–14, 2015–19, 2020–24, and 2025–29) in view of the long-term goal of the national development plan.

The roadmap stresses activities related to data collection, information development, and knowledge management on the impact of climate change. It also emphasizes the contribution of 11 sectors to climate change during the initial phase of the implementation of the Medium Term National Development Plan (RPJMN) 2010–2014. Following this period, ‘Planning and Policy, Regulation and Institutional Development’ and ‘Plans and Programs Implementation and Control with Monitoring and Evaluation’ will gradually have a higher weight from 2015 onwards. This strategy aims to enable well-designed and efficient policy actions by strengthening the institutional capacity of data and information management, climate risk assessment, and greenhouse gas inventory.

The entire document and sectoral reports have been made public on the Bappenas website.

➤ **Obstacles/challenges**

No obstacles/challenges were identified in the CY2009 target.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

Spatial Planning

Anticipated Outcome 3:

Policy coordination on climate change is enhanced

Indication of CY2009 Action 5:

- **Continue monitoring and evaluating the implementation of National Spatial Plan to Provincial and Regency / City Spatial Plan**

Ever since local autonomy was introduced in Indonesia, spatial plans at the provincial, regency, and city levels have lost their integrity/consistency with the national plan; this is because local governments issue their spatial plans with the approval of only their local parliaments. These inconsistencies prevent the GOI from paying the necessary attention to climate change issues in spatial plans.

The GOI gave the National Board for Spatial Planning Coordination (BKTRN) the role of reviewing local spatial plans irrespective of whether or not they were consistent with the national plan. For the purpose of improving the overall consistency of spatial planning at the regional/provincial level with national spatial planning, the PU enacted two regulations:

1. Law No. 26/2007 on Spatial Management and
2. Government Regulation No. 26/2008 on National Spatial Plan, to monitor implementation at the provincial, regency, and city levels.

Monitoring and evaluation of provincial-/regency-/city-level plans commenced in October 2008. The monitoring and evaluation activities proceed as follows:

- Firstly, the local government reviews the consistency of its special plan with upper-level government plans and the national plan.
- When the spatial plan passes the self-review of the local government, it is submitted to the upper-level government.
- When the spatial plan passes the review of the provincial government, it is submitted to BKTRN to go through the final review.
- BKTRN evaluates the consistency of the plan with the national plan while requesting the related line ministries to review whether the plan is in line with the policy actions planned or implemented by them.
- If BKTRN or the line ministries find any problem with the plan, BKTRN orders the local government to revise it.
- After checking it against the national plan and ministerial policies, the local plan can be issued.

(i) **Analysis of progress/attainments**

Table 3.1.7. Monitoring framework for CY2009 Action 5 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Review of the draft provincial/regency/city spatial plans by PU - Rounds of stakeholder consultations (mainly MOFR) - Revisions to reflect consultations - Endorsement by the Minister of Public Works 	<ul style="list-style-type: none"> - Number/percentage of the provincial/regency/city spatial plans reviewed and approved by PU 	<ul style="list-style-type: none"> - Collecting information from PU - Documents to review: <ul style="list-style-type: none"> • Report on the stakeholder consultation meetings (if possible)

➤ **Status**

The PU reported the progress in the review of local spatial plans as of January 2010 as follows:

Table 3.1.8. Number of local spatial plans reviewed as of January 2010

	The Number of Govt.	Spatial plans prepared by local Govt./Recommended to Central Govt. by Provincial Govt.	Approved by Central Govt.	Officially Enacted
Province	33	15	7	2
Regencies	399	56	2	7
Cities	98	20	2	1

The PU issued four regulations in 2009: Guidance on central government approval, guidance on preparation for provincial government, guidance on preparation for regency government, and guidance on preparation for municipal government.

The PU assists local governments by providing financial support and expertise, according to interviews with government officials.

➤ **Obstacles/challenges**

Most local governments have insufficient capacity (in terms of personnel and knowledge) to review and revise their spatial plans. Thus, many local governments have difficulty conducting self-reviews and submitting plans to the upper-level government.

During the final review process, local plans are often found to be inconsistent with the national conservation policies of the MOFR as local governments sometimes seek the utilization of forest areas for industrial use.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Strengthen support for local governments to conduct the self-review process by:

Enhancing the capacity of local stakeholders by preparing workshops to provide basic skills/knowledge necessary for the review process and by informing them of estimated requests/comments from the line ministries.

Anticipated Outcome 4:**Spatial plan network at the national level is enhanced****Indication of CY2009 Action 6:**

- **Start developing a spatial plan database, connecting relevant central governmental agencies**

Apart from the inconsistency of local spatial plans with the national spatial plan, another obstacle in effective policy planning and implementation has been the inconsistency of maps and data among the various government agencies.

In order to ensure the consistency of spatial data and to facilitate the access of relevant government agencies to the necessary information, the National Coordination Agency for Surveys and Mapping (Bakosurtanal) has been preparing a unified spatial plan database.

Fourteen governmental agencies will be connected to the data network and will be able to utilize integrated information with smoother access for the sake of their individual/coordinated policies.

For the long term, however, access to this database should be widened beyond these originally designated agencies and organizations.

In CY2008, Bakosurtanal prepared digital mapping of Java, Kalimantan, Sulawesi, Bali, and Nusa Tenggara. It also prepared the Regional Spatial Development Database.

(i) Analysis of progress/attainments**Table 3.1.9. Monitoring framework for CY2009 Action 6 in Cross-sectoral issues**

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Drafting the design of the database - Allocating budget - Contracting with the IT service provider to develop the database system, including data processing - Development/installation of the system with processed data - Testing the data connection and data transfer - Producing and issuing instructions for the database - Launch of the database service 	<ul style="list-style-type: none"> - Design of the spatial plan database, including service provider, agencies to be connected, and data to be stored - Progress of development/installation/test - Preparation of instruction - Launch of the database service 	<ul style="list-style-type: none"> - Collecting information from Bakosurtanal - Documents to review: <ul style="list-style-type: none"> • Draft design of the spatial plan database system • Instructions for the database

➤ **Status**

Two major tasks are planned for CY2009.

1. Digital mapping/Database

Mapping in Sumatra province has been delayed because only one company bid at the first tender in 2009. Bakosurtanal prepared the re-tender. At the end of June 2010, Bakosurtanal sent a letter to JICA requesting concurrence with the bidding document for mapping Sumatera; the contract is expected to be signed in the fourth quarter (October 2010). The digital map of Sumatra will be completed by 2014 or 2015.

Currently, digital mapping of the Maluku and Papua provinces has also been planned with the aim of completion by 2014 or 2015.

For the spatial planning database, the contract was signed in March 2010. Activity is scheduled to commence.

2. Networking

Bakosurtanal is expected to sign the contract by November 2010. The networking process is estimated to take four years before full operations can commence.

➤ **Obstacles/challenges**

The major obstacle is the delayed process of tendering and contracting.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

CDM

Anticipated Outcome 5:

To meet the total number of CDM projects stipulated in National Action Plan

Indication of CY2009 Action 7:

- Continue to approve and implement CDM projects to achieve NAP target

The GOI ratified the Kyoto Protocol in 2004. It established the National Commission for the Clean Development Mechanism (NC-CDM) in 2005 to approve proposed CDM projects in Indonesia that meet environmental, economic, social, and technological sustainability criteria. Even though only 24 proposals were approved by the end of 2007, the potential for emissions reduction of CDM projects is estimated to be quite large.

KLH estimates that CDM projects in the energy sector have the potential to reduce emissions by 125 million ton CO₂e in 2008–2012, which would account for 1.5%–3.5% of the world total of CDM volumes. Such potential, if fully realized, can significantly contribute to GHG emission reduction. At the same time, the variety of projects should also be increased in order to avail of the other benefits of CDM projects, such as sustainable development of local economies and communities at the project sites.

The GOI plans to increase the cumulative number of CDM projects approved by the NC-CDM from 20 projects in 2006 to 80 by 2009. The number of CDM projects in implementation has recently increased; the NC-CDM approved 46 CDM projects in CY2008.

(i) Analysis of progress/attainments

Table 3.1.10. Monitoring framework for CY2009 Action 7 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Project developers apply CDM projects to DNA with application documents- Secretariat checks application documents- Technical Team evaluates the CDM projects- National Commission (DNA) approves the CDM projects	<ul style="list-style-type: none">- List of applied CDM projects to DNA- List of evaluated CDM projects by Technical Team- List of approved CDM projects by DNA	<ul style="list-style-type: none">- Collecting information from KLH/NCCC (including DNA website)- Collecting relevant project documents from KLH/NCCC (including DNA website)

➤ **Status**

The NC-CDM aims to increase the number of CDM projects; its target for CY2009 was the approval of 20 projects by the end of 2009.

This target has been achieved. The NC-CDM had 34 projects approved in 2009. In comparison to the results of previous years—5 projects approved in 2005, 6 in 2006, 13 in 2007, and 46 in 2008—this is considered to be an appreciable trend.

Table 3.1.11. Number of approved CDM projects (target and realization)

Year	Target Number of Approval (in one year)	Realized Number of Approval (in one year)	Realized Number of Approval (Accumulation)
2007	-	13	24
2008	40	46	70
2009	20	34	104

According to the KLH report, COP13, held in Bali at the end of CY2007, helped the CDM to spread awareness, leading to more approvals.

Among the 122 projects approved by the GOI as of 1 June, 2010, 45 have been registered by the CDM executive board under the UNFCCC.

➤ **Obstacles/challenges**

Judging from the increased approval of CDM projects and the CY2009 achievement, there is no obstacle or challenge in achieving the numerical target.

In the meanwhile, an institutional change has taken place in NC-CDM. Ministerial Decree No. 522 of 2009 concerning National Council on Clean Development Mechanism was signed in September 2009. It stipulates that the Chairman of the NC-CDM would be Mr. Rachmat Witoelar, Executive Chairman of National Council on Climate Change, and that the NC-CDM Secretariat would be located in the National Council on Climate Change. Before the enactment of this decree, the Chairperson was Ms. Masnellyarti Hilman, Deputy Minister of the Ministry of Environment, who is a current member of NC-CDM; the secretariat had then been located in the Ministry of Environment. The chair of the technical team of NC-CDM still is located in the Ministry of Environment, despite the institutional change.

Considering the potential of CDM projects in Indonesia, Indonesia can increase the number of projects by conducting policy reform to overcome the barriers of CDM projects. Possible domestic barriers need to be surmounted, such as lack of data on emission factors for all grids. These data are provided by governments in countries such as China and India.

The relatively slow implementation of CDM projects in Indonesia is partly due to the international rule of A/R (Afforestation and Reforestation) CDM. Another obstacle is the rule of credit A/R CDM, which will expire and which needs to be replaced after expiration in order to meet targets. Because of the nature of the credit, buyers prefer ordinary CDM credit. Even if project developers can find buyers, the price of the credit tends to be lower.

It is also advisable to enhance the quality of the sustainable development aspects of CDM projects because they should contribute to sustainable development in Indonesia. According to the staff of the Ministry of Environment, DNA will review the application form that is submitted by project proponents to DNA to further secure the sustainable development aspects of CDM projects.

A web-/internet-based decision-making system to approve CDM projects is expected to be established in 2010, according to NCCC staff. With the new system, CDM projects can be approved faster and status and results can be tracked by the project developer. It currently takes 12 weeks until project approval; the new system is expected to shorten this period to 6 weeks.

(ii) Recommendations

➤ Recommendations for ensuring impact

Completed, continue implementation.

The CY2009 targets have been achieved. NC-CDM is expected to continue the smooth implementation of CDM projects after the change in institutional setting.

➤ Recommendations for beyond 2010

Continue approving CDM projects in 2010

The CY2010 target is the approval of 20 projects by the end of 2010, as achieved in CY2009.

The preparation of emission factor data of each energy grid

NC-CDM provided the emission factors of the Java-Madura-Bali (Jamali) grid and

Sumatera on their website. Five new emission factors (three for Kalimantan and two for Sulawesi) were supported by the Korean government. An update of these factors and the development of emission factors for Papua, NTT, and Maluku still are necessary. For CDM projects connected to the energy grid, grid emission factor data is required to calculate the amount of emission reduction. It is advisable for DNA, MEMR, PLN, and other related stakeholders to prepare and publish all of the data on the DNA website to reduce the transaction cost of sourcing the data during CDM project implementation.

Related agencies should enhance public relations activities for CDM

- Succeeding public relations activities, e.g. periodical workshops that invite the private sector to consider CDM, can enable the development of promising projects in various areas.

Co-benefit

Anticipated Outcome 6:

Planning/Implementation capacity of co-benefit approach is enhanced through model transactions

Indication of CY2009 Action 8:

- **Complete F/S on selected locations**

Indonesia is known as the world's seventh largest emitter of GHGs from the waste sector (solid waste, wastewater treatment, and human sewage); in 2000, Indonesia had GHG emissions of 32.5 Mt CO₂e, which is approximately 1% of its total emissions.

In December 2007, the GOI signed a joint statement with the GOJ to jointly conduct activities, contribute to development, and reduce GHG emissions from 2008 to 2011. KLH, the Ministry of the Environment of Japan (MOEJ), and the Overseas Environmental Cooperation Centre (OECC) cooperated to study the potential of the co-benefit approach to reduce GHG emissions in Indonesia. The study identified five sites for potential projects, conducted preparatory surveys, and implemented feasibility studies in two sites.

The results of the feasibility studies and pilot projects are expected to be in replicating the co-benefit approach through out the country, which will in turn contribute to the reduction of the GHG emissions and to local development. In the long run, various kinds of projects should be studied as potential projects/sites for the co-benefit approach in order to fully explore the longer term potential of this approach in Indonesia. Therefore, the results of the initial pilot projects should be evaluated from various perspectives and should be disclosed soon after the project period.

Progress of CY2008

On-site studies were planned for July 2008 and November 2008. The first was conducted from July to August 2008 and the second was conducted in January 2009.

The survey team comprised members from both KLH and the University of Indonesia (UI); it was headed by Dr. Setyo S. Moersidik, the Head of the Environmental Science Study Programme, University of Indonesia, to analyse the feasibility of co-benefit projects in two cities, Banjarmasin and Palembang.

In the first survey, the study team visited the following sites:

- In Banjarmasin: One waste landfill site, one power plant, one slaughter house, two

plywood plants, and one rubber plant

- In Palembang: One petroleum refinery factory, one waste landfill site, one slaughter house, one rubber plant, one palm cud plant, one tofu plant, and one cement factory

The second on-site study was conducted at the end of January 2009.

1. The study team comprised three officers from KLH, one officer from MOEJ, two advisors from JICA and Pacific Consultants Co., Ltd in Japan, and two researchers from OECC.
2. Two plants were selected from among the 11 sites that were surveyed during the first study: A slaughter house in Palembang and a wastewater treatment plant in Banjarmasin.
3. The team mainly analysed the potential co-benefit impacts at these two plants; they found GHG emission reduction to be very limited at the slaughter house in Palembang.

On the basis of the results of the second study, MOEJ and OECC decided to continue in CY2009 the feasibility studies at the two pilot project sites of the slaughter house in Palembang and the waste treatment project in Banjarmasin.

(i) Analysis of progress/attainments

Table 3.1.12. Monitoring framework for CY2009 Action 8 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Consultation with MOEJ and OECC on the F/S plan to finalize location and schedule of F/S - Organizing the F/S team including officers of KLH, OECC and external researchers - Allocating budget for F/S - Conduct F/S - Draft F/S report - Consultation with MOEJ and OECC on the draft F/S report - Review to reflect consultation 	<ul style="list-style-type: none"> - F/S plans including organization of the F/S team, and location and schedule of the visit(s) - Draft and finalized F/S report 	<ul style="list-style-type: none"> - Collecting information from KLH - Collecting information from MOEJ and OECC - Documents to review: <ul style="list-style-type: none"> • F/S plan • F/S report • Implementation plan of co-benefits pilot project after CY2010 (if exists)

➤ **Status**

On-site studies were conducted in October 2009 and January 2010. The first study aimed at collecting data in the dry season, and the second study in the wet season.

The study team hired local consultants for the collection and analysis of data from the two sites in the two cities, Banjarmasin and Palembang.

1. In Banjarmasin: A waste landfill site

2. In Palembang: A slaughter house

Table 3.1.13. Feasibility Study Sites

Project Location	Banjarmasin city, South Kalimantan Province	Palembang city, South Sumatra Province
Project Site	Waste disposal plant (Operated by Sanitation Department of Banjarmasin city)	Slaughter house (Operated by Agriculture Department of Palembang city)
GHG benefit	Reducing CH ₄ generated from anaerobic sediment and drainage	Reducing CH ₄ generated from excrement, waste, and drainage
Potential Co-Benefit	<ul style="list-style-type: none"> - Improving quality of water polluted by seeping water w/high level of COD (chemical oxygen demand), NH₃-N (ammoniac nitrogen), etc. - Reducing odour 	<ul style="list-style-type: none"> - Improving quality of water polluted by drainage w/high level of COD, BOD (biochemical oxygen demand), Oil and Grease, and SS (suspended solids) - Reducing odour
Proposed activities/technologies to be employed	<ul style="list-style-type: none"> - Composting - Semi- aerobic treatment method - Drainage treatment - CH₄ collection system 	<ul style="list-style-type: none"> - Improving drainage treatment facilities - Composting - CH₄ collection system

Following the two on-site studies, the study team analysed data and produced study reports in Japanese and English in March 2010.

In FY2009, JICA conducted a training programme on co-benefits, inviting stakeholders such as local government officials, to Japan from Indonesia.

➤ **Obstacles/challenges**

Project period inconsistent with the target actions in the Policy Matrix:

Difference in work years between the two countries: The difference in the work year, or fiscal year, between Japan and Indonesia hinders the smooth preparation of personnel and budget for studies and pilot projects.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Continue CY2010 actions: Implement two pilot projects

In addition to the feasibility studies listed as CY2009 Policy Matrix target actions under the Climate Change Program Loan, the GOI is expected to implement two pilot projects in CY2010.

For successful implementation of the pilot projects, the KLH needs to prepare for their implementation in CY2010 and CY2011 by:

- preparing a detailed plan of the two projects,
- calculating and securing budget for CY2010 and CY2011, and
- conducting capacity-building for implementation.

Fiscal Incentives

Anticipated Outcome 7:

Develop fiscal incentive framework for GHG emission reduction with promoting private led investment

Indication of CY2009 Action 9:

- Prepare comprehensive fiscal incentive blue print

(i) Analysis of progress/attainments

Table 3.1.14. Monitoring framework for CY2009 Action 9 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none">- Organize a project team and study- Conduct a study to draft the chapters- Revision of chapters to reflect consultations- Finalization of the draft- Finalization of the report	<ul style="list-style-type: none">- Finalized draft of study- Final report of the study- Progress/schedules of revision	<ul style="list-style-type: none">- Collecting information from MOF and JICA study team- Documents to review:<ul style="list-style-type: none">• Finalized draft• Final report

➤ **Status**

The Fiscal Policy Office of the Ministry of Finance (MOF), together with AusAID, conducted a study to develop the report called the Green Paper, which described the necessary fiscal policies to further strengthen climate policies in Indonesia.

The MOF issued the Indonesia Green Paper: Economic and Fiscal Policy Options for Climate Change Mitigation in Indonesia in December 2009, slightly later than scheduled. The paper analyses the current situation and recommends potential policies to address climate change issues, as follows:

- Introduction of Energy and Carbon Pricing:
 - Carbon tax/levy (earlier stage); and
 - Emissions trading (later stage);
- Geothermal Energy development through:
 - Enhancement of existing pre-tender field survey and exploration studies;
 - Geothermal tariff; and
 - Profit-sharing arrangements;
- Encouraging Regional Action on Forestry and Land-Use Change through:

- Performance-based payments to regional governments for activities related to forestry and land use change;
- Providing more flexibility to regional governments in programme design, programme implementation, spending, and making profits; and
- Arrangement of national schemes including channelling of international public and private carbon finance to regional activities, risk management, and so on.
- Securing International Carbon Finance through:
 - Improving access to international private carbon finance;
 - Obtaining more public finance; and
 - Supporting the creation of an international REDD mechanism; and
- Institutional Reform including:
 - Establishment of a climate policy unit within the MOF;
 - Proposing the establishment of an inter-ministry working group on climate policy to Bappenas and the Coordinating Ministry for Economics;
 - Encouragement of inter-ministerial review of existing legal, regulatory, and institutional structures; and
 - Encouragement of independent and integrated review of climate policy.

These policy options, if fully adapted, can significantly contribute to both adaptation and mitigation actions in Indonesia by increasing funds as well as improving the inter-ministerial/inter-regional/inter-sectoral coordination required for effective planning and implementation of activities.

➤ **Obstacles/challenges**

No obstacles/challenges were identified in the CY2009 target.

(ii) Recommendations

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

Early Warning Systems

Anticipated Outcome 8:

Data and information regarding meteorological early warning system available

Indication of CY2009 Action 10:

- Install 19 Automatic Weather Stations (AWS)
- Install 8 weather RADARs
- Install 11 Digital Rain Gauges

Indonesia, the largest archipelago in the world, consists of more than 17,500 islands and is thus quite vulnerable to the impacts of weather-related disasters. In order to mitigate future impacts from disasters caused by climate change, it is essential that the community and officials have timely access to adequate information such as forecasts and warnings. Therefore, the development of meteorological early warning systems is an urgent issue.

The BMG has been developing an early warning system for climate change so that it can disseminate information on climate and weather hazard risks in a timely manner to sectors such as agriculture and coastal and small islands. For this purpose, the BMG needs to improve its capacity to expeditiously collect necessary data from all Indonesia's 220 climate zones. The BMG needs to install three types of equipment:

Table 3.1.15. Facilities for meteorological early warning systems

	Function	Numbers before 2007
		to be added by 2009
		total number required
Automatic Weather Stations (AWS)	Enabling automatic measurements even from remote areas	120
		94
		more than 2,000
Weather Radars	Locating and detecting the types of precipitation	7
		13
		more than 24
Digital Rain Gauges	Gathering and measuring the amount of liquid precipitation over a set period of time	unknown
		31
		more than 4,000

The successful development of BMG's capacity may significantly contribute to overall policy planning and implementation of the GOI and may thus improve the safety of people living in vulnerable areas. The three-year installation period covers a limited proportion of the total equipment required; this steady progress, however, underscores the GOI's capacity-building in responding to climate issues.

Increasing radar and the number of AWS would help improve data quality and the early warning system, especially for floods. Observations made by human resources are not very accurate since some of these resources lacking training.

In September 2008, the BMG was renamed the Agency for Meteorology, Climatology and Geophysics (BMKG), by government decree. The new agency, BMKG, needs to improve its capacity to monitor, analyse, and disseminate necessary climate change information within the country.

(i) Analysis of progress/attainments

Table 3.1.16. Monitoring framework for CY2009 Action 10 in Cross-sectoral issues

Implementation steps	Evaluation indicators	Verification measures
<ul style="list-style-type: none"> - Prioritize areas to install facilities - Allocating budget - Contracting with service provider - Installation of the facilities - Stand-alone and connected test for the newly installed facilities - Start operating the facilities 	<ul style="list-style-type: none"> - Draft and finalized installation plans - Allocation of budget - Report of the operation of installed facilities 	<ul style="list-style-type: none"> - Collecting information from BMKG - Documents to review: <ul style="list-style-type: none"> • Installation plans • Report on the operation of installed facilities

➤ **Status**

1. AWS

19 AWS were installed by November 2009, as scheduled.

2. Weather Radar

BMKG completed the installation of only six out of the eight planned radar units in CY2009 due to technical issues. The installation of two radar units will be done in 2010 using the previous year's budget. One of the radar units has been installed and installation of the remaining one radar is underway as of June 2010.

3. Digital rain gauges

Eleven gauges have already been installed.

The locations of the Automatic Rain Gauges (ARG), Automatic Weather Systems (AWS), and Radar installed in 2009 are listed in the table below:

Table 3.1.17. Locations of ARG, AWS, and Radar installed in 2009

ARG	AWS	RADAR
Katolampa/Bogor	Jambi [2 locations]	Palembang
Pasanggrahan	Pekanbaru	Makassar
Malang	Sukabumi	Bima
Jember	Pekalongan	Palangkaraya
Probolinggo	Blora	Balikpapan
Tuban	Lamongan	Medan
Mataram	Lampung	Ambon
Jambi	Kediri	Jayapura
Gorontalo	Mojokerto	
Balikpapan	Kabupaten Pontianak	
Palembang	Palangkaraya	
	Balikpapan	
	Kupang	
	Sampit	
	Buntok	
	Pangkalan Bun	
	Bima	
	Ruteng	

➤ **Obstacles/challenges**

No obstacles/challenges were identified for CY2009 actions.

(ii) **Recommendations**

➤ **Recommendations for ensuring impact**

Not applicable.

➤ **Recommendations for beyond 2010**

Not applicable.

Annex

Indonesia: Policy Matrix for Climate Change Program Loan

Note 1: This matrix is based on the "National Action Plan Addressing Climate Change" prepared by the Government of Indonesia.

Note 2: All actions are categorized into three groups:

A: legal/regulatory reform (including overall planning), B: institutional/budgetary reform (including specific planning), and C: modal transactions.

Note 3: All status of actions are categorized into four groups: Exceed \oplus , Attained \circ , Substantial Progress \triangle and unfulfilled \times

Sector	Component	CY2007 Actions	Inclusion of CY2008 Actions	Inclusion of CY2009 Actions	Responsible Institutions (GO local/prov)
1. Mitigation					
1.1 LULUCF Sector					
1.1.1 Forestry					
		<p>A. Reforestation</p> <p>Maintenance of previous planting from Gerhan Program of 2005-2006 (514,488 ha) [C]</p> <p>Replant 722,380 ha of official forest through The National Movement on Forest and Land Rehabilitation (Gerhan) program in 2007 [C]</p> <p>Develop plan for next Gerhan program [B]</p>	<p>Maintenance of previous planting from Gerhan Program 2006-2007 (722,380 ha) [C]</p> <p>Replant 354,026 ha of official forest through Gerhan [C]</p> <p>Develop plan for next forest rehabilitation 1.7 million ha [B]</p>	<p>Maintenance of previous planting from Gerhan Program of 2007-2008 [C]</p> <p>Review mechanism and impacts of GERMAN program (2003-2009) and OAK Brian Kuitanan (Special Allocation Fund for Reforestation) to strengthen national forest rehabilitation policy for 2010-2014. [B]</p>	<p>MOFR (Mr. Indriastuti, Director General, DG of Land, Rehabilitation and Social Forestry, MOFR)</p> <p>MOFR (Mr. Indriastuti, Director General, DG of Land Rehabilitation and Social Forestry, MOFR)</p> <p>MOFR (Mr. Indriastuti, Director General, DG of Land Rehabilitation and Social Forestry, MOFR)</p>
	<p>(*) The formula used to estimate CO2 absorption amount is: above-ground net biomass growth ($\times 1.3$) \times C/F (carbon fraction of dry matter) $\times 44/12 \times 4/3$</p>	<p>B. Peat Land</p> <p>Issue a Presidential Instruction no. 2/2007 on Revitalization and Rehabilitation of Peat Land in Central Kalimantan. [C]</p>	<p>Issue a master plan on peat land rehabilitation in Central Kalimantan. [B]</p>	<p>Implement the master plan on peat land:</p> <p>1. Rehabilitation = 1,600 ha 2. Conservation = finalize coordination with Central Kalimantan Government's spatial planning in order to convert 308,000 ha production forestry into conservation area in Central Kalimantan [C]</p>	<p>Bappenas, MOFR, MOA and Central Kalimantan Government (Mr. Basoeki Karyawiradji, Director, Center for Forestry Planning & Statistics, MOFR, Mr. Djoko Winarno, Directorate of Forest and Land Rehabilitation Management)</p>

Sector	Outcomes	CY2007 Actions	Indicators of CY2008 Actions	Indicators of UY2009 Actions	Responsible Institutions (GOI focal point)
			Select locations (e.g. national parks, peat land) to conduct REDDI pilot projects. [C]	Conduct REDDI pilot projects. [C]	MOFR (Ms. Nur Masripain, Secretary, Secretariat of Agency for Forestry Research and Development, MOFR)
	Deforestation and degradation is reduced through the scheme of REDDI.	Complete preparatory work to launch REDDI. [A]	Develop incentive and monitoring mechanisms for REDDI. [B]	- Issue Ministerial Decree on Mechanism and Procedures of REDD under UNFCCC Framework. [A] - Prepare and submit Readiness Plan (R-Plan) to FCPF (Forest Carbon Partnership Facility) [B]	MOFR (Ms. Nur Masripain, Secretary, Secretariat of Agency for Forestry Research and Development, MOFR)
	Forest management is improved.	Issue a Government Regulation (PP) no. 8/2007 on Forest Planning Management and Forest Utilization. [A]	Establish Forest Management Units in 6 provinces. [B]	Establish a Model Forest Management Unit in all provinces. [B]	MOFR, provincial governments (Mr. Soetrisno, Director General of Forest Planning, MOFR)
		Review an existing guideline on forest fire prevention in national parks. [B]	Issue a Forest Fire Prevention Guideline. [B]	Issue Standard Operation Procedures (SOP) and equipment standards of the Forest Fire Prevention Guideline. Socialize the Forest Fire Prevention Guideline at provincial and district levels.	MOFR (Mr. Sonny Partono, Director, Directorate of Forest Fire Control, MOFR)
			Final Draft of Government Regulation on Integrated Watershed Management. [A]	Issue a Government Regulation on Integrated Watershed Management. [A]	MOFR (Dr. Saïer Hulabari, Director of Watershed Management, Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry)

Sector	Outcome	CY2007 Actions	Indicator of CY2008 Actions	Indicator of CY2009 Actions	Responsible Institutions (GO final price)
1.2 Energy Sector					
1.2.1 Power Plant					
Geothermal [Short-term target (by 2009)] The institution of geothermal energy development through private investment is improved. [Long-term target (by 2025)] Installed capacity is increased from 857MW in 2007 to 8,500MW in 2025. Reduction of CO2 emission approximately 57.9 million t / year	Issue a Government Regulation No 59/2007 on geothermal business activity. (Ar.9, Ar.13, and Ar.33) [A]	Issue Ministerial Regulations on "electricity geothermal base price" and "geothermal permit". [A]	Design a Feed-in-Tarif scheme for IPP-based Geothermal development. [A] Design an exploration fund scheme to promote Geothermal development at exploration stage. [A]	MEMR (Mr. Sugiharto, Director of Geothermal Enterprise Supervision and Groundwater Management MEMR)	
		Ministry of Finance Decree No 177 and 178/2007 on Taxes Incentive [A] Issue a Ministerial Order No.005/2007 on assignment of preliminary survey [A]			Update a Government Regulation No. 1/2007 on Investment Incentive [A]
Renewable Energy [Short-term target (by 2009)] The institution of renewable energy development is improved. [Long-term target (by 2025)] The share of renewable energy (including bio fuel but except for geothermal) is increased to at least 10% of total energy supply in 2025. Target for CO2 emission reduction is 17% from BAU (Business as usual) in 2025. (Geothermal and other renewable energy and energy conservation)	Enact the Law no. 30/2007 on Energy (promote renewable energy development) [A]	Expedite establishment of the National Energy Council (Dewan Energi Nasional: DEN) [B]	Finalize a Draft of President Regulation on Guideline of Formulation of National Energy Plan (RUEN) [A]	MEMR (Mr. Purwono, Director General of Energy and Electricity Utilization, MEMR)	
		Expedite the issuance of Government Regulations of the Energy Law on "energy tariff and incentive policy of new-renewable energy" and "demand and supply" [A]	Finalize Draft Government Regulations of "New and Renewable Energy Development" and "Energy Demand and Supply" [A]	MEMR (Mr. M. Rains Ariati, Director of Renewable Energy and Energy Conservation, DDEEU, MEMR)	

Sector	Outcome	CY2007 Actions	Indicator of CY2008 Actions	Indicator of CY2009 Actions	Responsible Institutions (GOI fiscal point)
	1.2.2 Industry, Domestic (household) and commercial		Industry, Domestic (household) and commercial		
	[Short-term target] energy intensity is reduced by 1% every year. [Long-term target] Energy elasticity decrease in less than one by 2025. Energy intensity is reduced to 12-18 % by 2025.		Expedite the issuance of the Government Regulations on energy conservation including fiscal incentive and disincentive, following the Energy Law no. 30/2007. [A]	Issue a Government Regulation on "Energy Conservation" [A]	MEMR (Ms. M. Raisa Ariati, Director of Renewable Energy and Energy Conservation, DGEEU, MEMR)
		The energy audit is conducted for 200 firms and industries and energy efficiency label is introduced for CFL [C]	Continue the energy audit system and 41 firms receive the audit and expand the energy efficiency label system. [C]	Design a mid-term energy audit and efficiency program, including medium term targets, incentive mechanisms, and monitoring and evaluation framework. [A] Conduct energy audit for 40 firms. [C] Issue ministerial regulation(s) for energy efficiency labeling system for CFL, TV, and refrigerator. [A]	MEMR (Ms. M. Raisa Ariati, Director of Renewable Energy and Energy Conservation, DGEEU, MEMR)
			Prepare Road Map of CO2 emission reduction in major sectors such as cement and steel by Energy Conservation based on improved database of energy consumption and CO2 emission. [A]	Issue a ministerial regulation on CO2 roadmap. [A] Design a CO2 roadmap implementation program, including incentive mechanisms, and monitoring and evaluation framework. [A]	MOI (Ms. Endang Suparini, Director of Center for Resource, Environment and Energy R&D, MOI)
			Drafting a Ministerial Regulation on CO2 emission reduction with large amount by sector (e.g. Cement, Steel) [A]		MOI (Ms. Endang Suparini, Director of Center for Resource, Environment and Energy R&D, MOI)
	1.2.3 Others		Others		
	Access to energy, including electricity, is enhanced by using renewable energy in rural villages.	Start Energy Self-sufficient Village Program [C]	Strengthen the coordination and monitoring framework for Energy Self-sufficient Villages Program among various line ministries. [B]	Implement Energy Self-Sufficient Village Program among various line ministries under coordinated monitoring framework. [B]	Coordinating Ministry for Economic Affairs (Ms. Misdahlati, Coordinating Ministry of Economic Affairs)

Sector	Country	CY2007 Actions	Indicators of CY2008 Actions	Indicators of CY2009 Actions	Responsible Institutions (GOI focal point)
2. Adaptation					
2.1. Water Resource Management, Water Supply and Sanitation					
2.1.1 River Management		River Management			
	Improving water resource management in integrated manner to strengthen the resilience to the increasing drought and flood risks, specifically in nationally strategic river basin in Java island.	Prepare a Government Regulation (PP) on water resource management. [A] Prepare a Presidential Decree (Perpres) on water resource council. [A]	Finalize a draft of Government Regulation on water resource management. [A]		PJ (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU)
			Issue a Presidential Decree on Water resource council. [A]	Establish a coordinated entity on water resource management (National Water Resource Council). [B]	PJ (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU) (Mr. Imam Anshori, Head of secretariat of National Water Resource Council, PU) (Mr. Widagdo, Director of River, Lake and Reservoir, DGWR, PU)
			Prepare a coordinated entity on water resource management (National Water Resource Council). [B]	Issue Presidential Decree for council members nomination to operationalize National Water Resources Council. [B]	
			Prepare integrated water resource management plans (POLA) with climate change assessment in national strategic river basins in Java island. [A]	Finalize integrated water resource management plans (POLA) in national strategic river basin in Java under the coordination of related river basin water resource council. [A]	PJ (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU) (Mr. Imam Sanjoso, Head of Subdi River Basin Planning)
			Establish river basin management offices 'Balai' and 'Balai Besar'. [B]	Strengthen river Basin management offices 'Balai' and 'Balai Besar'. [B]	PJ (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU) (Mr. Widagdo, Director of River, Lake and Reservoir, DGWR, PU)

Sector	Outcome	CY2007 Actions	Indication of CY2008 Actions	Indicator of CY2009 Actions	Responsible Institutions (GOI local govt)	
	2.1.2 Water Supply and Sanitation	Water Supply and Sanitation				
	Ensure access to sustainable potable water supply and sanitation services for non and under served populations. (Increase the rate of household access to safe water and sanitation facilities from 50 % in 2004 to 68% in 2009, and 65.5% to 75% in 2009.)	Prepare community based water supply and sanitation program (PAMSIMAS) targeted for 5,000 villages with 1,000 replication by 2012. [C]	Develop community based water supply and sanitation facilities in 990 villages under PAMSIMAS [C] Launch "Community based rural water supply and sanitation program" (PAMSIMAS) targeted for 5,000 villages with 1,000 replication [C]	Develop community based water supply and sanitation facilities in 1,000 villages under PAMSIMAS. [C]	PU (Directorate of Water Supply Development, Directorate General of Human Settlements, PU)	
		Review programs on water supply and sanitation system in capitals of kecamatan (BKK) , and prepare improved investment plan on 85 villages of BKK system expansion. [C]	Review programs on water supply and sanitation system in capitals of kecamatan (BKK) , and prepare improved investment plan on 100 villages of BKK system expansion. [C]	Implement construction of 150 BKKs [C]	PU (Directorate of Water Supply Development, Directorate General of Human Settlements, PU)	
		Develop community based waste water program (SANIMAS) in 128 locations [C]	Develop community based waste water program (SANIMAS) in 128 locations [C]	Develop community based waste water program (SANIMAS) in 110 locations [C]	PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU)	
			Issue a Ministerial Decree on strategy and policy for Sanitation Management. [A]	Design operation standard for sewerage service providers including corporate governance, tariff setting, service quality, and technical guidance. [B]	PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU)	
		Issue a guideline on community-based 3R (Reduce, Reuse and Recycle) project based on a Ministerial Decree on solid waste management in 2006. [A]	Issue a Ministerial Decree on strategy and policy for Drainage Management. [A]	Issue a Ministerial Decree on Strategy and Policy for Drainage Management. [A]	PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU) (Mr. Danny, Director of Bank Program, Directorate General of Human Settlements, PU)	

Sector	Outcome	CY2007 Actions	Indicator of CY2008 Actions	Indicator of CY2009 Actions	Responsible Institutions (GOI focal point)
2.2 Agriculture					
	Strengthening of institutional and regulatory framework to improve resilience of farm production and reduce drought risk	Issue a Ministerial Decree on irrigation management. (A)	Develop an irrigation asset management information system. (B)	Issue and implement guideline for strengthening operation on irrigation asset management information system. (B)	PU (Mr. Imran Agus Nugroho, Director of Irrigation, DGWR Dr. Agus Suprpto K, Direktorat BINA Program)
		Issue a Ministerial Decree of PU on Water Use Association (P3A) (No.33/PR1/M/2007) (A) Issue a Ministerial Decree on farmer's association (No. 273/2007). (A)	Amend a Ministerial Decree on farmer's association (No. 273/2007) to combine a function with P3A. (A)	Issue and implement guideline to combine P3A and farmers association function and develop pilots in 10 districts. (A)	MOA (Mr. Ir. Hilman Manan, DG of Land and Water Management) PU (Mr. Imran Agus Nugroho, Director of Irrigation, DGWR)
		Carry out System for Rice Intensification (SRI) practice in 14 provinces (59 packages). (C)	Carry out System for Rice Intensification (SRI) practice in 9 provinces (66 packages). (C)	Carry out System for Rice Intensification (SRI) practice in 21 provinces (111 packages) (MoA) and 9 provinces (60 packages) (PU) (C).	PU (Mr. Imran Agus Nugroho, Director of Irrigation, DGWR) MOA (Mr. Ir. Hilman Manan, DG of Land and Water Management)
			Carry out the Climate Field School Program (100 units) (C)	Carry out the Climate Field School Program (159 units) (C)	MOA (Mrs. Ir. Ai Waseni Hamid, Director of Crops Protection, DG of Food Crops, Dr. Sumardjo Geldi Hianto, Director of Water Management, DG of Land and Water Management)
		Establish "Research and Development Consortium" to strengthen agricultural research capacities responding to Climate Change. (B) Carry out the Climate Field School Program (167 units) (C) Complete a 'Dynamic Cropping Calendar Map' with long term	Complete a 'Dynamic Cropping Calendar Map' with long term meteorological forecast in Sumatra. (C)	Complete a 'Semi Dynamic Cropping Calendar Map' with long term meteorological forecast in Sulawesi and Kalimantan. (C)	MOA (Dr. Ir. Insa Las, Head / Director General, Indonesian Center for Agricultural Land Resources Research and Development)

Sector	Outcomes	CY2007 Actions	Indicators of CY2008 Actions	Indicators of CY2009 Actions	Responsible Institutions (GDI focal point)
3 Cross-Sectoral Issues					
3.1 Understanding the Impact of Climate Change					
	The First National Communication submitted to the UNFCCC in 1999, is updated.	Form a working group to revise the National Communication. [B]	Implement studies for the second National Communication. [B]	Finalize draft of the second National Communication. [B]	KLH (Ms. Sulistyewati, Assistant Deputy for Climate Change Impact Control)
3.2 Mainstreaming Climate Change in the National Development Program					
	Policy coordination on climate change is enhanced.	Issue a National Action Plan Addressing Climate Change. [A]	Establish a steering committee for climate change program coordination based on a Ministerial Decree. [A]	Fully operationalize the steering committee for coordinating climate change program. [B]	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)
	Policies to respond to climate change are linked to the national budget.	Draft a National Development Planning Response to Climate Change (Yellow Book). [A]	Finalize "The Development Plan Response to Climate Change" Book. [A]	Draft the Medium Term National Development Plan for 2010-2014 (the integrable program action and measures to respond to climate change). [A]	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)
			Include actions to respond to climate change in the Annual Government Work Plan for 2009. [A]	Conduct Comprehensive and Sectoral assessment (Road Map) on climate change planning and programming. [A]	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)
3.3 Improving Spatial Planning					
	Spatial plans are improved to incorporate climate change concern.	Enact the Law no. 26/2007 on Spatial Management. [A]	Enact the Government regulation No. 26/2008 on National Spatial Plan [A]	Continue monitoring and evaluating the implementation of National Spatial Plan to Provincial and Regency/City Spatial Plan [B]	PU (Mr. Iman S. Emawi, Directorate General, Directorate General of Spatial Planning, PU)
			Monitoring and evaluating the implementation of National Spatial Plan to Provincial and Regency/City Spatial Plan. [B]		PU (Mr. Iman S. Emawi, Directorate General, Directorate General of Spatial Planning, PU)
	Spatial plan network at the national level is enhanced.	Issue Presidential Regulation no. 85/2007 on Spatial Data Network. [A]	Improve/computerize spatial plan data managed by data centers. [C]	Start developing a spatial plan database, connecting relevant central governmental agencies. [C]	Bakorsurhansil (Mr. Agus Prjanto, head, bureau of planning and general)

Sector	Outcome	CY2007 Actions	Indicator of CY2008 Actions	Indicator of CY2009 Actions	Responsible Institutions (GOI focal point)
3.4 CDM					
	To meet the total number of CDM projects stipulated in National Action Plan	National Commission for Clean Development Mechanism (NC-CDM) approved 13 CDM project in 2007. [C]	Continue to approve and implement CDM projects to achieve NAP target. [C]	Continue to approve and implement CDM projects 20 CDM projects a year [C]	KLH (Ms. Sulistyowati, Assistant Deputy for Climate Change Impact Control) DNA may move to DNPI/National Council on Climate Change
3.5 Co-benefits					
	Planning/implementation capacity of co-benefit approach is enhanced through model transactions.	Conclude a joint Statement, promoting the co-benefits approach, between GOI and COJ. [A]	Identification/survey on 5 cities and conducting 2 F/S on 2 selected cities [C]	Complete F/S on selected locations	KLH (Ms. Sulistyowati, Assistant Deputy for Climate Change Impact Control)
3.6 Fiscal Incentives					
	Develop fiscal incentive framework for GHG emission reduction with promoting private led investment.		Conduct study on medium and long term fiscal incentives (tax and non tax) and appropriate energy price system for energy diversification and conservation. [C]	Prepare comprehensive fiscal incentive study as a basis of tax and non-tax reform for GHG emission reduction in geothermal sector. [C]	MOF (Mr. Askotari, Head, Fiscal Policy Office)
3.7 Early Warning System					
	Data and information regarding meteorological early warning system available	Installed 47 Automatic Weather Stations (AWS). [C] Installed 7 Weather RADARs [C]	Installed 7 Automatic Weather Stations (AWS). [C]	Install 19 Automatic Weather Stations (AWS). [C]	BMG (Dr. Andi Eka Sekya, Executive Secretary)
			Installed 4 Weather RADARs [C]	Install 8 weather RADARs [C]	BMG (Dr. Andi Eka Sekya, Executive Secretary)
			Installed 20 Digital rain gauges [C]	Install 11 Digital rain gauges [C]	BMG (Dr. Andi Eka Sekya, Executive Secretary)

Note: All actions are categorized into three groups:

A: legal/regulatory reform (including overall planning), B: institutional/budgetary reform (including specific planning), and C: model transactions.

Sector	Outcome	Responsible Institutions (GOI local point)	Indication of CY2009 Actions
Proposed New Sectors			
Disaster Management and Disaster Risk Management			
	Organizational Strengthening for Disaster Management	BAPPENAS (Mr. Suprayogo, Director, Special Area and Disadvantaged Region) BNPB (Mr. Sugeng, Deputy for Prevention and Preparedness)	Institutional strengthening of the National Disaster Management Agency (BNPB)
		BNPB MCH-A	Establishment of Local Disaster Management Agency (BPBD) at selected disaster prone Regencies/ Cities
	Improving Disaster Management Planning, Implementation and Evaluation	BNPB	Finalize National Disaster Management Plan
		BNPB BAPPENAS	Finalize National Action Plan for Disaster Risk Reduction (NAP-DPR 2010-2012)
	Mainstreaming the integration of National Disaster Management, Disaster Risk Reduction and Climate Change adaptation	BAPPENAS BNPB	Mainstreaming disaster management and disaster risk reduction in the context of climate change adaptation into the process of formulating the draft for next five year mid-term national development plan (2010-2014)
	Marine, Coastal and Fisheries		
	Strengthening of institutional and regulatory framework to manage coastal zones and small island	MMAF (National Secretariat of CTF-CFF, and Directorate General of Coastal and Small Island)	Launch the Indonesian National Plan of Actions (NPOA) of Coral Triangle Initiatives on Coral reef, fisheries and food security (CTI-CFF) and improve national NPOA. [A]
		MMAF (Ms. Ida Kusuma, Director of Marine and Coast, OG of Marine, Coast and Small Island Affairs)	Finalize the draft of Government Regulation on Disaster mitigation and Coastal damage. [A]
	MMAF (Directorate General of Coastal and Small Island)	Manage and Rehabilitate coral reef in 15 districts within 8 provinces (COREMAP). [C]	
	MMAF (Ms. Ida Kusuma, Director of Marine and Coast, OG of Marine, Coast and Small Island Affairs)	Conduct Mapping Priority areas for rehabilitation and utilization in marine and coastal areas, and conduct mangrove rehabilitation management [C]	
	MMAF (Dr. Budi Sulisti, Agency for Marine and Fisheries Research)	Conduct study for ocean carbon, and marine and coastal vulnerability to sea level rise [C]	

Indonesia: Policy Matrix for Climate Change Program Loan

Draft Internal Version

Note 1: This matrix is based on GOI's "National Action Plan Addressing Climate Chang

Note 2: All actions are categorized into three groups:

A: legal/regulatory reform (including overall planning), B: institutional/budgetary reform (including specific planning), and C: model transactions.

Note 3: the columns 'Implementation Steps', 'Evaluation Indicators', and 'Verification Me

Exceedingly attained.	◎	5
Attained.	○	36
Substantial Progress	△	13
Unfulfilled	×	0

Final Version

Outcome	Indication of CY2009 Actions	Responsible Institutions	Update and status CY2009	Category
1.Mitigation				
1.1LULUCF Sector				
1.1.1Forestry				
- Carbon absorption capacity is increased through the reforestation activities of 2007-2009 - Carbon dioxide absorbed of 2007 (CO2e/year) = 58.6 million ton (*) - Carbon dioxide absorbed of 2008 (CO2e/year) = 70.2 million ton (*) (*) The formula used to estimate CO2 absorption amount is: above-ground net biomass growth (=13) * C.F. (carbon fraction of dry matter) * 44/12 * 4/3	Maintenance of previous planting from Gerhan Program of 2007-2008 [C]	MOFR (Ms. Indriastuti, Director General, DG of Land Rehabilitation and Social Forestry, MOFR)	FEB-10; Achieved National budget for maintenance for previous planning is allocated: 250 billion Rp in 2009. 394 billion Rp is carried over from last year's budget. On P-1 (Maintenance-1: weeding, fertilizing, pest control, and replanting - 300270 Ha planned) 270250 Ha were finished. On P-2 maintenance, 165,256 Ha out of the 177,465 Ha planned have been achieved.	○
	Review mechanism and impacts of GERHAN program (2003-2009) and DAK Bidang Kuhutan (Special Allocation Fund for Reforestation) to strengthen national forest rehabilitation policy for 2010-2014. [B]	MOFR (Ms. Indriastuti, Director General, DG of Land Rehabilitation and Social Forestry, MOFR)	FEB-10; Achieved A major literature review has been completed and a report on the review has been drafted. Field studies have been completed in Lampung and Central Java and reports have been drafted. The AFD/JICA review team presented tentative results to MOFR. Presentation of review made at sectoral dialogue. Compiling report and summarizing findings still to be done.	○
	Implement the master plan on peat land: 1. Rehabilitation = 1,600 ha 2. Conservation = <i>finalize coordination with Central Kalimantan Government's spatial planning in order to convert 308,000 ha production forestry into conservation area in Central Kalimantan</i> [C]	Bappenas, MOFR, MOA, and Central Kalimantan Government (Mr. Basoeki Karyaatmadja, Director, Center for Forestry Planning & Statistics, MOFR, Mr. Djoko Winarno, Directorate of Forest and Land Rehabilitation Management)	FEB-10; Follow-up According to RLPS data, 2,650 ha of land received maintenance by contractors (GPS coordinates provided). Efforts are being made to resolve the spatial planning problem. The Provincial Governor and Minister met and agreed to work towards a solution. Technical reports for implementing the Master Plan have been formulated. Provincial offices are implementing a number of programs relevant to rehabilitation of land in the ex-Mega Rice project area including: Provincial regulation banning fires for land preparation; Issuance of a directive to intensify tree planting: Rehabilitation under the AusAID funded REDD project; Support of pro-community programmes (e.g. Hutan Rakyat); Intensification of small-scale plantations.	△

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Deforestation and degradation is reduced through the scheme of REDDI.	Conduct REDDI pilot projects [C]	MOFR (Ms. Nur Masripatin, Head of Research Centre for Social Economy and Policy, Agency for Forestry Research and Development, MOFR)	JAN-10; Achieved 27 pilot projects are being designed/implemented. The only pilot projects consulted with MOFR are Australia (2 locations), GTZ (2 locations), KOICA (2 locations), TNC (1 location), ITTO (1 location).	○
	Issue Ministerial Decree on Mechanism and Procedures of REDD under UNFCCC Framework. [A]	MOFR (Ms. Nur Masripatin, Head of Research Centre for Social Economy and Policy, Agency for Forestry Research and Development, MOFR)	JAN-10; Achieved Ministry of Forestry Regulation No. P.30/Menhut-II/2009 on Reducing Emissions from Deforestation and Forest Degradation and Ministry of Forestry Decree Number: P. 36/Menhut-II/2009 Regarding Procedures for Licensing of Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests issued. Ministerial Decree No 36/2009 is facing some constraints to its implementation. MOFR Committee on REDD is still not very effective, and lacks clarity in authorities.	○
	Prepare and submit Readiness Plan (R-Plan) to FCPF (Forest Carbon Partnership Facility).[B]	MOFR (Ms. Nur Masripatin, Head of Research Centre for Social Economy and Policy, Agency for Forestry Research and Development, MOFR)	JAN-10; Achieved R-Plan has been approved by FCPF. MOFR submitted the latest action plan on reducing emissions to Bappenas in Jan. 2010. A new permanent unit within MOFR to address REDD is planned to be established [not anymore in the form of working group] in Jan/Feb. 2010.	○

Forest management is improved.	Establish a Model Forest Management Unit in all provinces.[B]	MOFR, provincial governments (Mr. Soetrisno, Director General of Forest Planning, MOFR)	FEB-10; Follow-up 29 model KPH are currently planned for 27 provinces (2 provinces have proposed 2 model KPH). In Dec. 2009, 13 model KPH were approved by the Minister. The others are at the stage of finalising the planning, before submission to MOFR. 10 KPH were declared for conservation forest areas; these are not model KPH. Finalisation of the outstanding model KPH can be expected once decree is issued by MoHA allowing KPH to be established as additional administrative unit. The engineering designs, which set out no., types and boundaries of KPH, for only 10 of the 33 provinces were approved by Dec.2009. Of the others, 3 are now ready for the Minister's signature, another 11 must be revised, one has made some progress, and 8 provinces have made little progress.	△
	Issue Standard Operation Procedures (SOP) and equipment standards of the Forest Fire Prevention Guideline. Socialize the Forest Fire Prevention Guideline at provincial and district levels.	MOFR (Mr. Noor Hidayat, Director of Forest Fire Control, MOFR)	FEB-10; Follow-up DG explained that 2007 SOP are being used. MOFR is organizing the Government to hold one mass national meeting (Apel Siaga) on forest fire as a "show of force" in about April 2010, before the dry season.	△
	Issue a Government Regulation on Integrated Watershed Management. [A]	MOFR (Dr. Silver Hutabarat, Director of Watershed Management, Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry)	FEB-10; Achieved PU and MOFR agreed the contents of government regulation and wait for the sign of President. A coordinating team on Integrated Watershed Management has been established under Bappenas through Decree 52/M.PPN/HK/12/2009. Two Decrees on integrated watershed management have been issued, followed up by socialization at regional level. It is intended that the watershed management capacity of BP-DAS will be strengthened, with new tasks to be added at these units.	○

1.2 Energy sector				
1.2.1 Power Plant				
<p>Geothermal [Short-term target (by 2009)] The institution of geothermal energy development through private investment is improved.</p> <p>[Long-term target (by 2025)] Installed capacity is increased from 857MW in 2007 to 9,500MW in 2025. Reduction of CO2 emission = approximately 57.9 million t / year</p>	<p>Design a Feed-in-Tariff scheme for IPP-based Geothermal development. [A]</p>	<p>MEMR (Mr. Sugiharto Harsoprayitno, Director of Geothermal Enterprise Supervision and Groundwater Management, MEMR)</p>	<p>JAN-10; Achieved The Ministerial Regulation No.32 year 2009 on Purchase Standard Price of Electricity Power by PT PLN (Persero) from Geothermal Electricity Power Station has been issued on 4th December 2009.</p>	○
	<p>Design an exploration fund scheme to promote Geothermal development at exploration stage. [A]</p>		<p>JAN-10; Achieved Bappenas, jointly with KfW, has completed Part A (geotechnical) of the Risk Mitigation Study including exploration fund scheme targeting all Greenfield in Indonesia. Part B (risk management structure) is expected to be finalized in February 2010, and part C (Procedure) in March 2010.</p>	○
<p>Renewable Energy [Short-term target (by 2009)] The institution of renewable energy development is improved.</p> <p>[Long-term target (by 2025)] The share of renewable energy (including bio fuel but except for geothermal) is increased to at least 10% of total energy supply in 2025.</p> <p>Target for CO2 emission reduction is 17% from BAU (Business as usual) in 2025. (Geothermal and other renewable energy and energy conservation)</p>	<p>Finalize a Draft of President Regulation on Guideline of Formulation of National Energy Plan (RUEN) [A] (As per A&M Team discussion with DEN, this document is called National Energy Policy)</p>	<p>National Energy Council (Mr. Novian Mustahar, Secretary General of National Energy Council)</p>	<p>FEB-10; Follow-up Drafted Presidential Regulation on Guideline (National Energy Policy) for the formulation of RUEN is under revising process under DEN. At moment, the draft is expected to be finalized in March 2010.</p>	△
	<p>Finalize Draft Government Regulations of "New and Renewable Energy Development" and "Energy Demand and Supply" [A]</p>		<p>MEMR (Ms. M. Ratna Ariati, Director of Renewable Energy and Energy Conservation, DGEEU, MEMR)</p>	<p>JAN-10; Follow-up Drafted 3 Government Regulations (PP): (A) on New and Renewable Energy, (B) on Energy Demand and Supply and (C) on Energy Conservation and Energy Efficiency. For (A) and (B), the initial round of internal review at Legal Unit within MEMR has been completed, and they are currently under stakeholder consultation. The revised drafts will be sent back to the Legal Unit within MEMR, followed by an external review process in the Ministry of Law and Human Rights for finalization.</p>

1.2.2 Industry, Domestic (household) and commercial				
<p>[Short-term target] energy intensity is reduced by 1% every year.</p> <p>[Long-term target] Energy elasticity decrease to less than one by 2025.</p> <p>Energy intensity is reduced to 12-18 % by 2025.</p>	Issue a Government Regulation on "Energy Conservation" [A]	MEMR (Ms. M. Ratna Ariati, Director of Renewable Energy and Energy Conservation, DGEEU, MEMR)	DEC-09; Achieved The Ministerial Regulation No.70 year 2009 on Energy Conservation has been issued on 16th November 2009.	○
	Design a mid-term energy audit and efficiency program, including medium term targets, incentive mechanisms, and monitoring and evaluation framework. [A]	MEMR (Ms. M. Ratna Ariati, Director of Renewable Energy and Energy Conservation, DGEEU, MEMR)	JAN-10; Follow-up Study on mid-term energy audit and efficiency program by JICA has been started, and it will be completed by June 2010. (1st on-site survey in January, 2nd on-site survey in March, workshop in May)	△
	Conduct energy audit for 40 firms. [C]		DEC-09; Achieved 40 energy audits have been completed, and audit reports are currently being finalized. Among 40 audits, 24 audits have been implemented for buildings (governmental, commercial/private, hospital, hotel), and 16 audits have been implemented for industries (food, beverage, manufacturing, textile, chemical and cement).	○
	Issue ministerial regulation(s) for energy efficiency labeling system for CFL, TV, and refrigerator. [A]		JAN-10; Follow-up Technical guidance for CFL has been revised, and sent back to the Legal Unit to be a Ministerial Decree. Technical Guidance for TV and Refrigerator are still in the process of formulating energy efficiency criteria. The performance standard is still under revision by the Ministry of Industry. Once the energy efficiency criteria is formulated it will be combined with the revised performance standard and the draft guideline for the labelling of TV and refrigerator will be finalized. This will be followed by internal and stakeholders review and then submitted to the Legal Unit for the issuance of the Ministerial Regulation.	△

	Issue a ministerial regulation on CO2 roadmap. [A]	MOI (Ms. Endang Supartini, Director of Center for Resource, Environment and Energy R&D, MOI)	JAN-10; Follow-up The drafted Ministerial regulation for CO2 roadmap on the Cement sector will be finalized by July 2010, after reflecting the results of studies by METI Japan and AFD. MOI aims for drafting CO2 roadmap for Steel sector and ministerial regulation within 2010.	△
	Design a CO2 roadmap implementation program, including incentive mechanisms, and monitoring and evaluation framework. [A]		JAN-10; Follow-up The study team for improving the CO2 roadmap for both Steel and Cement sector with METI Japan has completed a series of site visits and the analysis of technology options. The findings will be presented in February, and the study will be completed by March 2010. AFD has completed the first stage of study to improve CO2 roadmap for the Cement sector and will launch the second stage of the study (6 months) from February 2010.	△
1.2.3Others				
Access to energy, including electricity, is enhanced by using renewable energy in rural villages.	Implement Energy Self-Sufficient Village Program among various line ministries under coordinated monitoring framework. [B]	Coordinating Ministry for Economic Affairs (Ms. Musdalifah, Coordinating Ministry of Economic Affairs)	JAN-10; Achieved DME has been implemented in 208 villages for CY2009 (confirmed with database)	○

2. Adaptation				
2.1 Water Resources Sector				
Improving water resource management in integrated manner to strengthen the resilience to the increasing drought and flood risks, specifically in nationally strategic river basin in Java island.	Establish a coordinated entity on water resource management (National Water Resource Council). [B]	PU (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU) (Mr. Imam Anshori, Head of secretariat of National Water Resource Council, PU)	FEB-10; Achieved The National Water Resource Council (NWRC) has been established. Presidential Decree No.6/2009 for council members nomination to operationalize National Water Resources Council was issued in June 2009. As current status, (a) Three (3) special committees under NWRC have been formed. These are i) Consideration to determine river territories and groundwater zoning, ii) Consideration to determine 3H (Hydrology, Hydrometeorology and Hydrogeology), and iii) Consideration to determine National Water Resources Policy. Out of 33, thirteen (13) provincial water resources council have been established (Central Java, NTB, South Sulawesi) and 20 are under preparation. Eleven (11) water resources coordination team (TKPSDA) have been established (Pemali-Comal, Jratunseluna, Serayu-Bogowonto, Brantas, Lombok, Cimanuk-Cisanggarung, Jambu-aye, Ayesesa, Jenebrak Progo-Opak-Serang, and Bengawan Solo).	⊙
	Issue Presidential Decree for council members nomination to operationalize National Water Resources Council. [B]			⊙
	Finalize integrated water resource management plans (POLA) in national strategic river basin in Java under the coordination of related river basin water resource council. [A]	PU (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU) (Mr. Imam Santoso, Head of Subdit River Basin Planning)	FEB-10; Achieved Out of four (4) National Strategic River Basin in Java, one (1) (Brantas River Basin) has finalized POLA, the ministerial decree is about to be issued. Preparation for Ministerial Decree is on-going for three National Strategic River Basins in Java; Pemali-Comal, Jratunseluna and Serayu Bogowonto. Out of 69 river basins, 58 river basins have prepared POLA. The Guideline for POLA preparation has been finalized and issued by Ministerial Decree on 31 August, 2009.	○
	Strengthen river Basin management offices 'Balai' and 'Balai Besar'. [B]	PU (Mr. Sugiyanto, Director of Water Resources Management, DGWR, PU)	FEB-10; Achieved 31 River basin offices (20 Balai and 11 Balai Besar covering 69 river basins) have been established. 121 engineers have been recruited by Dec, 2009. These engineers will be doing internship in 7 directorate of PU until April and likely to be dispatched to Balai and Balai Besars from May, 2010. Each Balai and Balai Besar is expected to receive 3 new engineers. The "Dissemination Unit of Water Resource Management and Technology (DURMT)" is already under operation and it started to provide trainings to the staffs from all Balai and Balai Besars.	○

2.2 Water supply and Sanitation Sector				
Ensure access to sustainable potable water supply and sanitation services for non and under served populations. (Increase the rate of household access to safe water and sanitation facilities from 50 % in 2004 to 68% in 2009, and 65.3% to 75% in 2009.)	Develop community based water supply and sanitation facilities in 1,650 villages under PAMSIMAS. [C]	PU (Directorate of Water Supply Development, Directorate General of Human Settlements, PU)	JAN-10; Achieved 1,650 projects (100%) have been initiated, 1,548 projects (94%) have signed a contract between the PU and the community for the implementation after completing the preparatory stages and 368 projects (22%) have completed implementation.	○
	Implement construction of 156 IKKs. [C]	PU (Directorate of Water Supply Development, Directorate General of Human Settlements, PU)	JAN-10; Achieved All of the planned 156 IKK projects in CY2009 were already implemented. However, the completed portion is only the construction of water intake and treatment facilities and it will take few more years before the projects start operation until the distribution pipes were installed by local governments.	○
	Develop community based waste water program (SANIMAS) in 110 locations. [C]	PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU)	JAN-10; Follow-up The number of projects being implemented is 97 as there are not enough applications from local governments due to the budget constraint. The achievement ratio is 88%. It is expected that the number of SANIMAS projects will substantially increase from 2010 as DAK (special allocation fund) was earmarked for the sanitation sector, especially for SANIMAS projects, for the next 5-year plan.	△

	Design operation standard for sewerage service providers including corporate governance, tariff setting, service quality, and technical guidance. [B]	<p>PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU)</p>	<p>JAN-10; Achieved A "draft management criteria for sewerage service providers" was prepared by a JICA project team in cooperation with the <i>PU</i> in January 2010.</p>	○
	Issue a Ministerial Decree on Strategy and Policy for Drainage Management. [A]	<p>PU (Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements, PU) (Mr. Danny, Director of Bina Program, Directorate General of Human Settlements, PU) (Mr. Widagdo, Director of River, Lake and Reservoir, Directorate General of Water Resources)</p>	<p>JAN-10; Follow-up The draft Ministerial Decree for Drainage Management aiming to alleviate the urban drainage problem was prepared by the DGHS in 2006. However, due to the requirement by the Minister to incorporate flood control aspect in the ministerial decree, which comes under the responsibility of DGWR, coordination between 2 DGs are necessitated. DGWR expressed that it is possible to incorporate urban flood and drainage management aspects in the currently prepared Government Regulation (PP) of River Management through coordination with DGHS, and it is planned to be issued in early 2010. DGHS, nevertheless, prepared guidebooks for drainage management for local governments and is promoting drainage management activities at a local level, including promotion of "Eco Drain (cleaning of existing drains through public and private participation)" concept, to address urban flood and inundation problems.</p>	△

2.3 Agriculture Sector				
Strengthening of institutional and regulating framework to improve resilience of farm production and reduce drought risk.	Issue and implement guideline for strengthening operation on irrigation asset management information system. [B]	<p>PU (Mr. Imam Agus Nugroho, Director of Irrigation, DGWR Dr. Agus Suprpto K, Directorate BINA Program)</p>	<p>JAN-10; Follow-up Draft of Ministerial Regulation on irrigation asset management system (guideline for implementation of the system) is under revision and to be finalized in 2010. The PU is already implementing the GOI's pilot projects at the district level from 2009 and inventory development under PISP.</p>	△
	Issue and implement guideline to combine P3A and farmers association function and develop pilots in 10 districts. [A]	<p>MOA (Mr. Ir. Hiliman Manan, DG of Land and Water Management) PU (Mr. Imam Agus Nugroho, Director of Irrigation, DGWR)</p>	<p>JAN-10; Achieved The guideline for combining P3A and farmers association function was issued, however, it is currently under revision in consultation with PU. Pilot Projects of LEPLI (Lembaga Ekonomi Pertanian Lahan Irigasi, Economic and agricultural institution at irrigation land, name of new organization integrating P3A and Farmers Group) were launched in 14 districts (9 provinces) and all LEPLI under the pilot projects are expected to be formally "legalized" at the end of 2009.</p>	◎
	Carry out System for Rice Intensification (SRI) practice in 21 provinces (111 packages) (MoA) and 9 provinces (60 packages) (PU) [C].	<p>PU (Mr. Imam Agus Nugroho, Director of Irrigation, DGWR) MOA (Mr. Ir. Hiliman Manan, DG of Land and Water Management)</p>	<p>JAN-10; Achieved The MOA completed targeted 111 packages. The PU completed targeted 60 packages.</p>	○

	Carry out the Climate Field School Program (159 units) [C]	MOA (Mrs. Ir. Ati Wasiati Hamid, Director of Crops Protection, DG of Food Crops, Dr. Sumardjo Gatot Irianto, Director of Water Management, DG of Land and Water Management)	OCT-09; Achieved The DGFC of the MOA completed all of targeted 100 units of the Climate Field School and the DGLWM completed targeted all 59 units plus extra 18 units using fund from non-GOI fund (donor). Total 177 units were carried out.	◎
	Complete a 'Semi Dynamic Cropping Calendar Map' with long term meteorological forecast in Sulawesi and Kalimantan. [C]	MOA (Dr. Ir. Irsal Las, Head / Director General, Indonesian Center for Agricultural Land Resources Research and Development)	OCT-09; Achieved The semi dynamic crop calendar map for Kalimantan and Sulawesi were completed as planned.	○

2.4 Disaster Management Sector				
Organizational Strengthening for Disaster Management	Institutional strengthening of the National Disaster Management Agency (BNPB)	BAPPENAS (Mr. Suprayoga, Director, Special Area and Disadvantaged Region) BNPB (Mr. Sugeng, Deputy for Prevention and Preparedness)	JAN-10; Achieved 116 new staffs were recruited at the selection held on November 19. Currently the new staff candidate are under administrative arrangements at the State Personnel Agency. They will be active on February 1, 2010. As BNPB still lacks human resources of disaster control, geology, geography, administration, and law, it is going to propose BKN and MOF for continuous recruitment budget.	○
	Establishment of Local Disaster Management Agency (BPBD) at selected disaster prone Regencies/ Cities	BNPB MOHA	FEB-10; Achieved At the provincial level: 18 BPBDs have been established; and 4 are preparing draft process. At Regency (Kabupaten) level: 44 BPBDs have been formed (of which 14 were at the 'highly vulnerable regencies/cities' identified by BNPB); and 16 are in regulation process (of which 13 were at the 'highly vulnerable regencies/cities' identified by BNPB).	○
Improving Disaster Management Planning, Implementation and Evaluation	Finalize National Disaster Management Plan	BNPB	JAN-10; Achieved National Disaster Management Plan was launched on 19 Feb, 2010.	○
	Finalize National Action Plan for Disaster Risk Reduction (NAP-DPR 2010-2012)	BNPB BAPPENAS	FEB-10; Achieved The NAP-DRR was completed in the end of 2009 and launched On February 19, 2010.	○
Mainstreaming the integration of Natural Disaster Management, Disaster Risk Reduction and Climate Change adaptation	Mainstreaming disaster management and disaster risk reduction in the context of climate change adaptation, into the process of formulating the draft for next five year mid-term national development plan (2010-2014)	BAPPENAS BNPB	FEB-10; Achieved The Medium Term National Development Plan for 2010-2014 was made public. Out of 11 chapters in the Book II, Chapter 9 & 10 states the current condition & estimated impacts of, and necessary response to disasters related to Climate Change.	○

2.5 Marine and Fisheries Sector				
Strengthening of institutional and regulating framework to manage coastal zones and small island.	Launch the Indonesian National Plan of Actions (NPOA) of Coral Triangle Initiatives on Coral reef, fisheries and food security (CTI-CFF) and improve detailed NPOA [A]	MMAF (National Secretariat of CTI-CFF, and Directorate General of Coastal and Small Island)	JAN-10; Achieved Draft NPOA have been approved and 6 member countries of CTI in May 2009. The roadmap of actions during 2010-2011 was approved in November 2009. National Secretariat for Coral Triangle Initiative (NSCTI) and 7 WG were established: Priority Seascapes Designation / Ecosystem Approach to Management of Fisheries & Other Marine Resources / Establishment of Marine Protected Areas / Climate Change Adaptation / Threatened Species protection / Monitoring and Evaluation / Capacity Building. The geographic priority areas (ecoregion) for conservation of marine biodiversity in Indonesia are decided by MMAF.	○
	Finalize the draft of Government Regulation on Disaster mitigation and Coastal damage. [A]	MMAF (Dr. Subandono Diposaptono, Director of Marine and Coast, DG of Marine, Coast and Small Island Affairs)	JAN-10; Achieved The government regulation have been submitted to the State Secretariat to be signed by the President, approved and recorded in the State Gazette.	○
	Manage and Rehabilitate coral reef in 15 districts within 8 provinces (COREMAP). [C]	MMAF (Directorate General of Coastal and Small Island)	JAN-10; Achieved Phase II of COREMAP is on-going in 16 districts within 8 provinces. Major achievement of COREMAP in 2009. *Out of 16 districts, 13 have set Marine conservation areas (2.5 million ha). *1,632 community groups have been formed by CBM project. *298 units of information centres were established in project sites. *54 facilities were constructed for sanitation and clean water supply. *Recruited 732 extension workers. *Distribution of village funds and grants funds to 257 villages.	○
	Conduct Mapping Priority areas for rehabilitation and utilization in marine and coastal areas, and conduct mangrove rehabilitation management [C]	MMAF (Dr. Subandono Diposaptono, Director of Marine and Coast, DG of Marine, Coast and Small Island Affairs)	JAN-10; Achieved Mapping Priority areas for rehabilitation and utilization in marine and coastal areas in fiscal year 2009 was completed. The priority areas maps cover 20 locations in 6 provinces in Java, Madura and Seribu Island. Mangrove rehabilitation in fiscal year 2009 completed, the plan was implemented in 6 locations of 12 Municipalities (Expansion about 110 ha, planting 53,500 mangroves).	○

	Conduct study for ocean carbon, and marine and coastal vulnerability to sea level rise [C]	MMAF (Dr. Budi Sulistio, Agency for Marine and Fisheries Research)	JAN-10; Achieved A pilot project of coastal vulnerability study in Semarang is being conducted to develop the methodology to be applied to other areas. CO2 flow study in Banten Bay, North West Java is under implementation. National Scientific Communication Forum has been established. The Forum members include: BRKP, Bakosurtanal, LAPAN, LIPI, ITB, ITS (Surabaya Univ.) and IPB. Climatology & Meteorological Institute is planning to conduct a joint survey / research with Agency for Marine & Fisheries Research, Ministry of Marine Affairs & Fisheries (AMFR, MMAF).	○
3.1 Understanding the Impact of Climate Change				
The First National Communication, submitted to the UNFCCC in 1999, is updated.	Finalize draft of the second National Communication. [B]	KLH (Ms. Sulistyowati, Assistant Deputy for Climate Change Impact Control)	JAN-10; Achieved Summary of the Second National Communication was publicized. The entire report is to be finalized.	○
3.2 Mainstreaming climate Change in the National Development Planning				
Policy coordination on climate change is enhanced.	Fully operationalize the steering committee for coordinating climate change program. [B]	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)	DEC-09; Achieved The second and third steering committees for climate change program loan were held in February and May 2009. The 4th steering committee was held in November 2009. The steering committee for climate change on road map and the steering committee for Indonesian climate change trust fund have been established.	○
Policies to respond to climate change are linked to the national budget.	Draft the Medium Term National Development Plan for 2010-2014 that integrate program action and measures to respond to climate change [A].	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)	FEB-10; Achieved The Medium Term National Development Plan for 2010-2014 was made public.	○
	Conduct Comprehensive and Sectoral assessment (Road Map) on climate change planning and programming. [A]	Bappenas (Mr. Edi Effendi Tedjakusuma, Director of Environment)	FEB-10; Achieved Synthesis report of the Indonesia Climate Change Sectoral Roadmap was publicized. The entire report after the revision is to be made public.	○

3.3 Spatial Planning				
Spatial plans are improved to incorporate climate change concern.	Continue monitoring and evaluating the implementation of National Spatial Plan to Provincial and Regency/City Spatial Plan [B]	PU (Mr. Iman S. Ernawi, Directorate General, Directorate General of Spatial Planning, PU)	FEB-10; Achieved 2 provinces, 7 regencies and 1 city have enacted revised spatial plans as of January 2010.	○
Spatial plan network at the national level is enhanced.	Start developing a spatial plan database, connecting relevant central governmental agencies. [C]	Bakorsurtanal (Mr. Agus Prijanto, head, bureau of planning and general)	FEB-10; Follow-up The process for contacting on developing of mapping and network is on-going. On mapping component, the contract will be signed probably in July/August 2010. On Networking component, the contract is expected to be signed in 2010.	△
3.4 CDM				
To meet the total number of CDM projects stipulated in National Action Plan	Continue to approve and implement CDM projects 20 CDM projects a year [C]	KLH (Ms. Sulistyowati, Assistant Deputy for Climate Change Impact Control) DNA may move to DNPI/National Council on Climate Change	DEC-09; Achieved Indonesian DNA has approved 34 projects in 2009. Ministerial Decree (522/2009) on DNA was signed in Sep 2009.	◎
3.5 Co-benefits				
Planning/Implementation capacity of co-benefit approach is enhanced through model transactions.	Complete F/S on selected locations.	KLH (Ms. Sulistyowati, Assistant Deputy for Climate Change Impact Control)	FEB-09; Achieved Field survey including data collection for dry and rainy seasons at two F/S locations, in Palembang and Banjarmasin, is completed. The final draft F/S is completed.	○
3.6 Fiscal Incentives				
Develop fiscal incentive framework for GHG emission reduction with promoting private led investment	Prepare comprehensive fiscal incentive study as a basis of tax and non-tax reform for GHG emission reduction in geothermal sector [C]	MOF (Mr. Askolani, Head, Fiscal Policy Office)	DEC-09; Achieved MOF released the Green Paper.	○

3.7 Early Warning Systems				
Data and information regarding meteorological early warning system available	Install 19 Automatic Weather Stations (AWS). [C] Install 8 weather RADARs. [C] Installed 11 Digital raingauges. [C]	BMKG (Dr. Andi Eka Sakya, Executive Secretary)	FEB-10; Achieved Completed the installment of AWS and Digital rain gauges facilities as 2009 indicator. On radars, installed 7 radars. 1 Radar is under process.	○